

ENVIRONMENTAL ASSESSMENT

DOI-BLM-NV-B010-2015-0004-EA

CMZ Exploration Project



November 2014



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

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

DOI-BLM-NV-B010-2015-0004-EA

**NULEGACY GOLD CORPORATION NV
CMZ EXPLORATION PROJECT
EUREKA COUNTY, NEVADA**

Preliminary Environmental Assessment

#DOI-BLM-NV-B010-2015-0004-EA

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ENVIRONMENTAL ASSESSMENT**

TABLE OF CONTENTS

	Page
1 INTRODUCTION / PURPOSE OF AND NEED FOR ACTION	1-1
1.1 Introduction.....	1-1
1.2 Purpose of and Need for Action.....	1-1
1.3 Decision to be Made	1-3
1.4 BLM Responsibilities and Relationship to Planning	1-3
1.4.1 Conformance with Land Use Plans	1-3
1.4.2 Local Land Use Planning and Policy	1-3
1.5 Scoping and Issues	1-4
1.5.1 Scoping.....	1-4
1.5.2 Issues	1-4
2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES.....	2-1
2.1 Proposed Action	2-1
2.1.1 Equipment and Personnel	2-3
2.1.2 Overland Travel and Constructed Roads.....	2-3
2.1.3 Drill Sites and Drilling Procedures	2-4
2.1.4 Hazardous Materials	2-5
2.1.5 Water Management Plan	2-5
2.1.6 Surface Occupancy	2-6
2.1.7 Reclamation Plan	2-6
2.1.8 Monitoring.....	2-10
2.1.9 Applicant-Committed Environmental Protection Measures.....	2-10
2.2 No Action Alternative	2-14
2.3 Alternatives Considered but Eliminated from Detailed Analysis	2-14
2.3.1 Cross Country/Overland Travel Only Alternative.....	2-14
2.3.2 Use Only Existing Roads Alternative.....	2-15
3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES.....	3-1
3.1 Introduction.....	3-1
3.2 Effects of the Proposed Action.....	3-4
3.2.1 Air Quality.....	3-4
3.2.2 Cultural Resources.....	3-7
3.2.3 Fire Management.....	3-8
3.2.4 Forestry and Woodland Resources	3-8
3.2.5 Geology and Minerals.....	3-9
3.2.6 Migratory Birds	3-11
3.2.7 Native American Religious Concerns.....	3-13
3.2.8 Noxious Weeds, Invasive, and Non-native Species	3-15
3.2.9 Rangeland Management/Livestock Grazing	3-16
3.2.10 Recreation	3-17
3.2.11 Social Values and Economics	3-17
3.2.12 Soils.....	3-18
3.2.13 Special Status Species.....	3-24
3.2.14 Vegetation	3-32
3.2.15 Visual Resources.....	3-38
3.2.16 Wastes, Solid or Hazardous.....	3-39
3.2.17 Water Quality	3-40

	3.2.18	Wild Horses.....	3-42
		Mitigation.....	3-45
	3.2.19	Wildlife	3-45
3.3		Effects of the No Action Alternative.....	3-47
	3.3.1	Air Quality.....	3-48
	3.3.2	Cultural Resources.....	3-48
	3.3.3	Fire Management	3-48
	3.3.4	Forestry and Woodland Resources	3-48
	3.3.5	Geology and Minerals.....	3-48
	3.3.6	Migratory Birds	3-48
	3.3.7	Native American Religious Concerns.....	3-49
	3.3.8	Noxious Weeds, Invasive, and Non-native Species	3-49
	3.3.9	Rangeland Management/Livestock Grazing	3-49
	3.3.10	Recreation	3-49
	3.3.11	Social Values and Economics	3-50
	3.3.12	Soils.....	3-50
	3.3.13	Special Status Species.....	3-50
	3.3.14	Vegetation	3-50
	3.3.15	Visual Resources.....	3-51
	3.3.16	Wastes, Hazardous or Solid.....	3-51
	3.3.17	Water Quality	3-51
	3.3.18	Wild Horses.....	3-51
	3.3.19	Wildlife	3-52
4		CUMULATIVE IMPACT ANALYSIS	4-1
	4.1	Introduction.....	4-1
	4.2	Cumulative Effects Study Areas.....	4-1
	4.2.1	Past, Present, and Reasonably Foreseeable Future Actions	4-4
	4.3	Evaluation of Potential Cumulative Impacts	4-8
	4.3.1	Cultural Resources.....	4-8
	4.3.2	Migratory Birds	4-9
	4.3.3	Noxious Weeds, Invasive and Non-native Species	4-11
	4.3.4	Social Values and Economics.....	4-12
	4.3.5	Soils.....	4-13
	4.3.6	Special Status Species	4-14
	4.3.7	Vegetation	4-15
	4.3.8	Visual Resources	4-17
	4.3.9	Wild Horses	4-17
	4.3.10	Wildlife	4-19
5		CONSULTATION and COORDINATION	5-1
	5.1	Persons, Groups, and Agencies Consulted	5-1
	5.2	List of Preparers and Reviewers	5-1
6		REFERENCES.....	6-1

LIST OF FIGURES

	Page
Figure 1.1.1: Project Area, Access, and Land Status	1-2
Figure 2.1.1: Existing, Notice-Level, and Proposed Phase I Disturbance	2-2
Figure 3.2.5: Geologic Map of the Project Area	3-10
Figure 3.2.12: Soil Associations within the Project Area.....	3-19
Figure 3.2.13a: BLM-Provided Greater Sage-Grouse PPH within the Project Area and Proposed Phase I Disturbance	3-27
Figure 3.2.12b: Field-Verified Vegetation Communities within the Project Area	3-29
Figure 3.2.14: Ecological Sites within the Project Area.....	3-34
Figure 3.2.18: Wild Horse High Usage Areas and Inventory Data.....	3-43
Figure 4.2.1: Cumulative Effects Study Areas.....	4-3

LIST OF TABLES

	Page
Table 2.1-1: Acreage of Existing/Acknowledged and Proposed Project Surface Disturbance.....	2-1
Table 2.1-2: Anticipated BLM Seed Mix	2-7
Table 2.1-3: Anticipated Reclamation Schedule.....	2-8
Table 3.1-1: Elements Associated with Supplemental Authorities and Rationale for Detailed Analysis for the Proposed Action.....	3-1
Table 3.1-2: Resources or Uses Not Associated with Supplemental Authorities.....	3-3
Table 3.2-1: Migratory Bird Species Detected in the Project Area	3-11
Table 3.2-2: Summary of Soil Mapping Units and Characteristics.....	3-20
Table 3.2-3: Potential Surface Disturbance to each Soil Series in the Project Area...	3-23
Table 3.2-4: Potential Surface Disturbance to Ecological Sites within the Project Area	3-37
Table 3.2-5: BLM Visual Resource Management Classes.....	3-39
Table 4.2-1: Cumulative Effects Study Areas.....	4-2
Table 4.2-2: Allotments Located Within the CESAs	4-4
Table 4.2-3: Rangeland Improvements Located Within the CESAs.....	4-4
Table 4.2-4: Past and Present Rights-of-Way Acres in the CESAs	4-6
Table 4.2-5: Past and Present Minerals Disturbance Acres in the CESAs.....	4-7

LIST OF ACRONYMS AND ABBREVIATIONS

°	degrees
3 Bars	3 Bars Ecosystem and Landscape and Restoration Project
4WD	four-wheel drive
amsl	above mean sea level
ARPA	Archaeological Resources Protection Act of 1979
AUM	animal unit month
BAPC	Bureau of Air Pollution Control
BLM	Bureau of Land Management
BMPs	best management practices
BMRR	Bureau of Mining Regulation and Reclamation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund)
CESA	cumulative effects study area
CFR	Code of Federal Regulations
CO	carbon monoxide
CTGD	Carlin-type gold deposits
DETR	Department of Employment, Training, and Rehabilitation
EA	Environmental Assessment
EO	Executive Order
EPMs	Environmental Protection Measures
ESA	Endangered Species Act of 1973, as amended
ESD	Ecological Site Description
F	Fahrenheit
FLPMA	Federal Land Policy and Management Act of 1976
GHG	greenhouse gas
GPS	Global Positioning System
HFRA	Healthy Forests Restoration Act of 2003
HMA	Herd Management Area
IM	Instruction Memorandum
LCT	Lahontan cutthroat trout
LR2000	Land & Mineral Legacy Rehost 2000 System
MBTA	Migratory Bird Treaty Act of 1918
Mining Law	General Mining Law of 1872, as amended
MLFO	Mount Lewis Field Office
MOU	Memorandum of Understanding
MSHA	Mine Safety and Health Administration
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NDOA	Nevada Department of Agriculture
NDOT	Nevada Department of Transportation
NDEP	Nevada Division of Environmental Protection
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act of 1969
NNHP	Nevada Natural Heritage Program

NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statute
NSAAQS	Nevada State Ambient Air Quality Standards
NSDO	Nevada State Demographer's Office
NUG	NuLegacy Gold Corporation NV
OHV	off-highway vehicle
P.L.	Public Law
Plan	Plan of Operations/Nevada Reclamation Permit Application
PLS	pure live seed
PM _{2.5}	particulate matter less than 2.5 microns in size
PM ₁₀	particulate matter less than 10 microns in size
PGH	Preliminary General Habitat
PPH	Preliminary Priority Habitat
Project	CMZ Exploration Project
PSD	Prevention of Significant Deterioration
RC	reverse circulation
RFFAs	reasonably foreseeable future actions
RMP	Resource Management Plan
ROWs	rights-of-way
SAD	Surface Area Disturbance
SIP	State Implementation Plan
SO ₂	sulfur dioxide
TCPs	Traditional Cultural Properties
US	United States
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service
VRM	Visual Resource Management
WRCC	Western Regional Climate Center
WSA	Wilderness Study Area

**CMZ EXPLORATION PROJECT
ENVIRONMENTAL ASSESSMENT**

1 INTRODUCTION / PURPOSE OF AND NEED FOR ACTION

1.1 Introduction

NuLegacy Gold Corporation NV (NUG) proposes to conduct surface exploration activities at the CMZ Exploration Project (Project) located in north-central Nevada approximately 58 miles northwest of Eureka, Nevada, in Eureka County. The Project is located on public lands administered by the Bureau of Land Management (BLM), Mount Lewis Field Office (MLFO). The Project is located in all or parts of Sections 12, 13, 24, and 25, Township 25 North, Range 49 East (T25N, R49E), and Sections 7, 18, 19, and 30, T25N, R50E, Mount Diablo Base and Meridian (Project Area). The Project can be accessed from Eureka, Nevada by traveling approximately 44 miles north on State Route 278, turning west on JD Ranch Road, driving for approximately eight miles until reaching the road that branches south, continuing for approximately four miles, and then west for approximately two miles on the road segment that accesses the Project Area. Figure 1.1.1 shows the Project location, access, and land status.

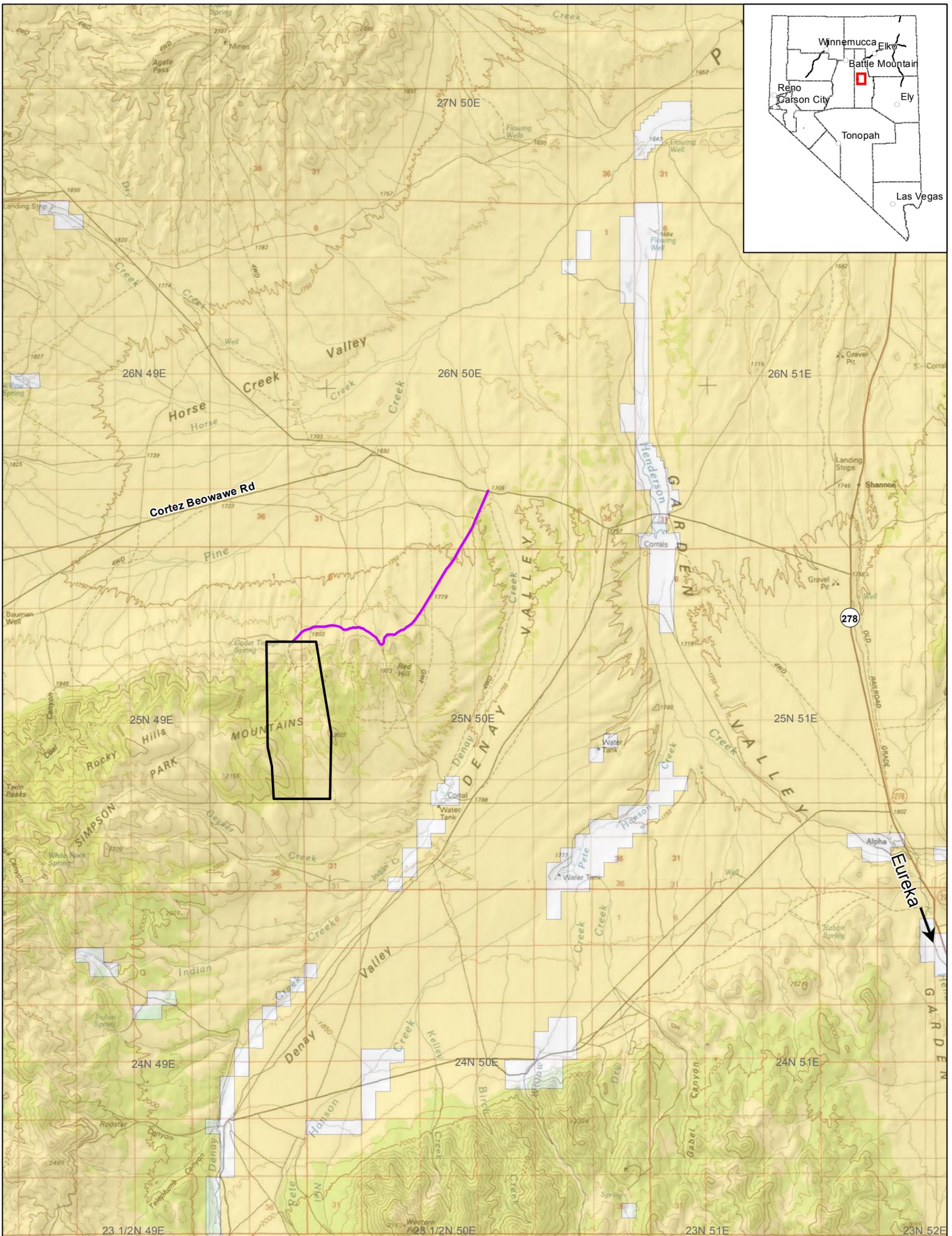
NUG proposes to expand existing Notice-level activities (up to five acres of disturbance) to include phased exploration activities within the 1,760-acre Project Area. NUG proposes to conduct exploration-related activities that would create approximately 95 acres of new surface disturbance for a total Project-related disturbance of approximately 100 acres. Exploration activities would be conducted in phases, with approximately 44.1 acres of surface disturbance occurring under Phase I. NUG, under the existing Notice NVN-089695, could conduct up to five acres under the Notice while this Environmental Assessment (EA) is being prepared.

Plan of Operations #NVN-091891/Nevada Reclamation Permit Application (Plan) was submitted to the BLM and the Nevada Division of Environmental Protection (NDEP) Bureau of Mining Regulation and Reclamation (BMRR) in December 2013 (revised January 2014), in accordance with BLM Surface Management Regulations 43 Code of Federal Regulations (CFR) 3809, as amended, and Nevada reclamation regulations at Nevada Administrative Code (NAC) 519A. NUG proposes to conduct the following activities associated with the Project: reverse circulation (RC) and core drilling from constructed drill sites; road construction; overland travel; bulk sampling; geotechnical auger holes and geological test pits; geologic and geophysical mapping; and surface disturbance associated with the construction and installation of water monitoring wells, water extraction wells, and a meteorological station, in order to collect baseline data and establish baseline conditions.

1.2 Purpose of and Need for Action

On lands open to location under the General Mining Law of 1872, as amended (Mining Law), the BLM administers the surface of public land and federal subsurface mineral estate under the Mining Law and the Federal Land Policy and Management Act of 1976 (FLPMA). The FLPMA also governs BLM's administration of public land not open to location under the Mining Law.

The purpose of the Proposed Action is to provide NUG the opportunity to explore, locate, and delineate precious metal (gold) deposits on its mining claims on public lands, as provided under the Mining Law. The need for the action is established by the BLM's responsibility under Section 302 of the FLPMA and the BLM Surface Management Regulations at 43 CFR 3809, to respond to a plan of operations to allow an operator to prospect, explore, and assess locatable



Explanation

-  Project Area
-  Project Access Road

Land Status

-  Bureau of Land Management
-  Private

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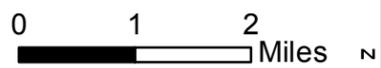
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CMZ EXPLORATION PROJECT

Project Area, Access, and Land Status

Figure 1.1.1



10/30/2014

mineral resources on public lands, and to take any action to prevent unnecessary or undue degradation of the public lands.

1.3 Decision to be Made

The decision the BLM would make, based on the National Environmental Policy Act of 1969 (NEPA), includes the following options: 1) approve the Plan with no modifications; 2) approve the Plan with additional mitigation measures that are needed to prevent unnecessary or undue degradation of public lands and reduce or eliminate the effects of the proposed action or alternatives; or 3) deny the approval of the Plan as currently written and not authorize the Project if it is found that the Proposed Action does not comply with the 3809 regulations and the FLPMA mandate to prevent unnecessary or undue degradation.

1.4 BLM Responsibilities and Relationship to Planning

The BLM is responsible for the preparation of this EA, which was prepared in conformance with NEPA, applicable laws and regulations passed subsequently, including the President's Council on Environmental Quality regulations implementing NEPA (40 CFR 1500-1508), U.S. Department of Interior requirements, and the policy guidance provided in the BLM NEPA Handbook H-1790-1 (BLM 2008a). Under 43 CFR 3809.415, the operator of a plan of operations must prevent unnecessary or undue degradation to the public lands.

1.4.1 Conformance with Land Use Plans

The Proposed Action conforms with the BLM's Shoshone-Eureka Resource Management Plan, as amended (RMP) dated February 26, 1986 (BLM 1986a). Specifically, on page 29 in the RMP Record of Decision, 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," 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," "Current Mineral Production Areas," number 5:

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

1.4.2 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

Eureka County's economy. The Natural Resources and Federal or State Land Use Element was developed and included in the Master Plan in response to Nevada Senate Bill 40, which was passed in 1983, and directs counties to develop plans and strategies for resources that occur within lands managed by federal and state agencies. Policies within the Eureka County Master Plan promote the expansion of mining operations/areas. The BLM acknowledges that NUG would have to comply with any applicable Eureka County codes.

The Natural Resources and Land Use Element, included in the Eureka County Master Plan, outlines objectives for natural resource management and land use on federal and state administered lands in Eureka County. This land use element states that it is designed to accomplish the following: "1) protect the human and natural environment of Eureka County; 2) facilitate federal agency efforts to resolve inconsistencies between federal land use decisions and County policy; and 3) provide strategies, procedures, and policies for progressive land and resource management" (Eureka County 2010).

1.5 Scoping and Issues

1.5.1 Scoping

The Project was internally scoped by the BLM interdisciplinary team at a meeting held on May 14, 2014, at the BLM office in Battle Mountain.

1.5.2 Issues

During this meeting, BLM resource specialists identified the elements associated with supplemental authorities and other resources and uses to be addressed in this document as outlined in Chapter 3. Issues and potential impacts related to specific resources associated with the Proposed Action were identified:

- Air Quality/Greenhouse Gas (GHG) Emissions
- Cultural Resources
- Fire Management
- Forest and Woodland Management
- Geology and Mineral Resources
- Livestock Grazing
- Migratory Birds
- Native American Religious Concerns
- Noxious Weeds, Invasive, and Non-native Species
- Paleontological Resources
- Recreation
- Social Values and Economics
- Soils
- Special Status Species
- Vegetation
- Wastes, Hazardous and Solid
- Water Quality, Surface and Ground Water
- Wild Horses
- Wildlife

2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

The Proposed Action consists of expanding existing/acknowledged Notice-level exploration activities on public land within the 1,760-acre Project Area. Project activities consist of the following: exploration drilling; construction of roads, drill pads and sumps; bulk sampling; overland travel; geotechnical auger holes and geological test pits; installation of water monitoring and water extraction wells; installation of a meteorological station; and reclamation. NUG proposes to conduct exploration-related activities that would create approximately 95 acres of new surface disturbance, which includes approximately 44.1 acres of proposed Phase I disturbance. In addition, up to five acres of Notice-level disturbance is included for a total Project-related disturbance of approximately 100 acres. Table 2.1-1 displays the disturbance details. Notice-level and proposed Phase I surface disturbance is shown on Figure 2.1.1.

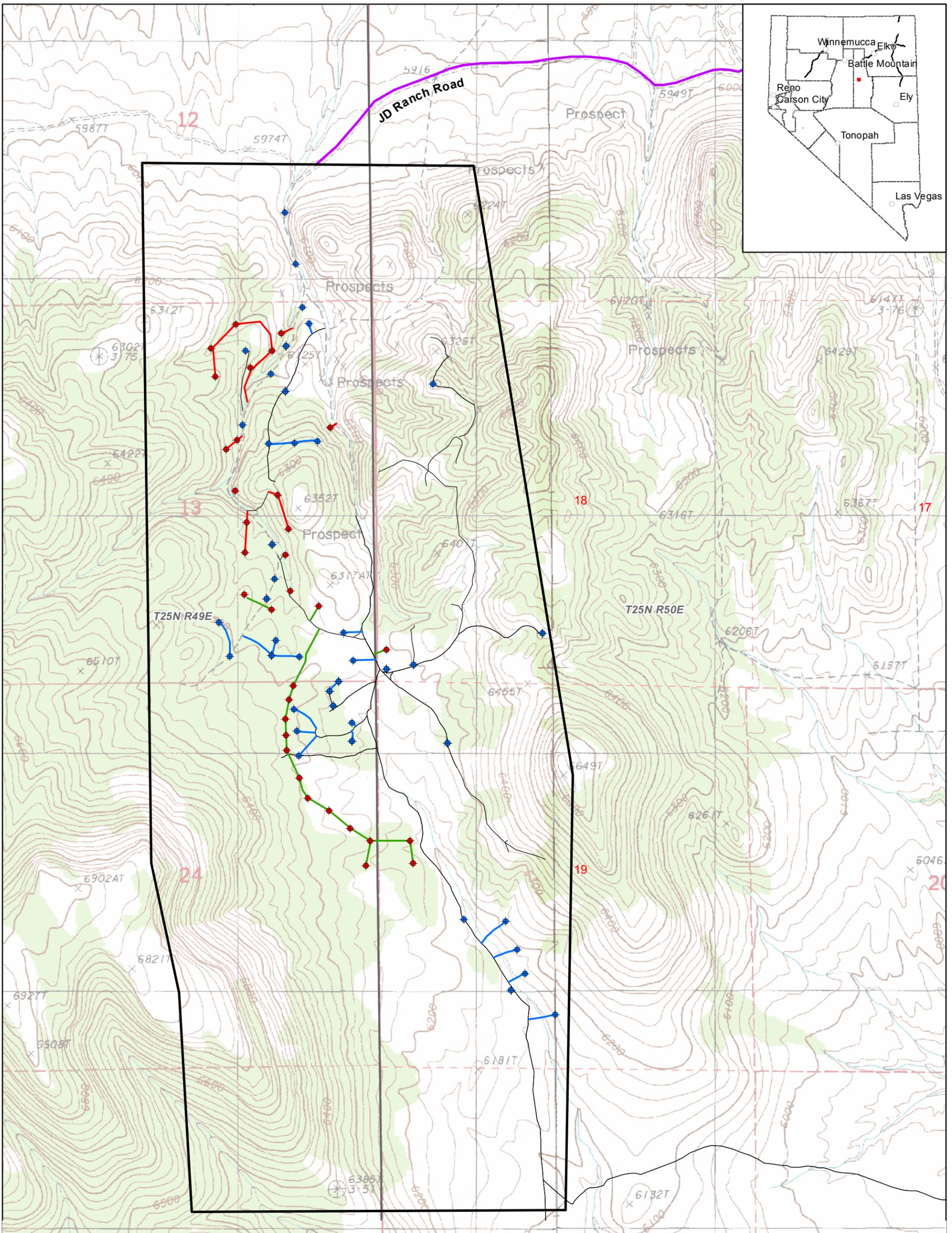
Table 2.1-1: Acreage of Existing/Acknowledged and Proposed Project Surface Disturbance

Surface Disturbing Activity	Surface Disturbance (acres)		
	Proposed Phase I	Subsequent Phases	Total
Constructed Access Roads	19.7	20.0	39.7
Overland Travel	1.9	2.5	4.4
Constructed Drill Sites ¹	22.5	22.2	44.7
Bulk Sample Excavations	--	2.5	2.5
Soil and Geotechnical Test Pits	--	1.5	1.5
Water Monitoring Well Sites	--	1.0	1.0
Water Extraction Well Sites	--	1.0	1.0
Meteorological Station	--	0.2	0.2
Notice-Level Disturbance	--	--	5.0
Total Disturbance	44.1	50.9	100.0

¹Includes Geotechnical Drill Sites

²Total disturbance under Notice-level activities could be up to 5 acres during the NEPA process.

As outlined in Table 2.1-1, NUG has projected the total existing/acknowledged, proposed, and subsequent surface disturbance would be approximately 100 acres. By using a phased approach to drilling, NUG would assess the expansion needs of the Project based on current drill results. In



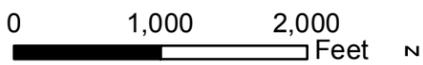
Explanation

- Project Area
- ◆ Proposed Drill Site
- Proposed Constructed Road
- Proposed Overland Travel
- Project Access Road
- Notice-Level Disturbance**
- ◆ Drill Site
- Overland Travel
- Existing Road

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Existing, Notice-Level, and
 Proposed Phase 1 Disturbance

Figure 2.1.1

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order to provide the BLM and BMRR with relevant data concerning subsequent phases of surface disturbance, NUG would provide documentation (i.e., work plans and maps) with specific locations of roads and drill sites for the areas of planned exploration prior to commencing the proposed exploration activities at least one month in advance. The BLM would provide a review and approval of each submittal prior to the initiation of activities under each work plan. In addition, NUG would provide to the BLM and NDEP an annual report on or before April 15th of each year that documents surface disturbance locations and the amount of surface disturbance delineated with a Global Positioning System (GPS) unit, types of surface disturbance, and any completed concurrent reclamation. The BLM would verify the disturbance amount prior to approving work plans for subsequent phases.

2.1.1 Equipment and Personnel

Generally, four personnel would be on site during Project activities, including one NUG geologist and two to three contract drill operators per drill rig. Exploration drilling equipment could include a track- or truck-mounted RC drill rig and/or a core rig (during Phase I up to two drill rigs may be on site at any time), four-wheel drive (4WD) pickup trucks, backhoe, and a combination water truck/pipe truck for drill support. Under subsequent phases, baseline collection equipment would include small rotary drills for geotechnical testing and a backhoe or an excavator for trenching and bulk sampling.

NUG 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.

All heavy equipment (e.g., drills, water truck, dozers, and excavators) would be washed and inspected before entering BLM-administered lands. Inspection and cleaning would concentrate on the undercarriage, with special emphasis on axles, frame, cross-members, motor mounts, underneath steps, running boards, and front bumper/brush guard assemblies. This practice would not apply to service vehicles traveling frequently in and out of the Project Area that would remain on the roadway.

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 on site. Exploration drill pads, which require earth moving, would be located and constructed using standard construction practices for temporary mineral exploration roads to minimize surface disturbance, erosion and visual contrast, as well as to facilitate reclamation.

All Project-related traffic would observe prudent speed limits to enhance public safety, protect wildlife, wild horses and livestock, and minimize dust emissions. Maintenance of these roads would only be conducted as necessary.

2.1.2 Overland Travel and Constructed Roads

NUG plans to utilize overland travel access whenever possible. Under Phase I, NUG proposes to utilize approximately 53,800 linear feet of overland travel routes. Overland travel routes would be approximately ten feet wide to accommodate the track widths on the track-mounted drill rig.

Exploration roads that require earth-moving would be located and constructed using standard construction practices for temporary mineral exploration roads to minimize surface disturbance, erosion, and visual contrast, as well as to facilitate reclamation. NUG proposes to construct approximately 29,100 linear feet of exploration roads. The standard running width would be approximately 14 feet and includes two feet for a safety berm as required by the Mine Safety and Health Administration (MSHA). The downslope side of the cut and fill would be at the angle of repose.

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. Road construction within drainages would be avoided whenever possible. When drainages must be crossed by a road, Best Management Practices (BMPs) established by the NDEP and the Nevada Division of Conservation Districts through the State Environmental Commission (1994) would be followed to minimize the surface disturbance and erosion potential. Blasting or the use of a rock breaker may be necessary to construct roads in areas of outcrop. Routine road maintenance could be required and would consist of smoothing ruts, filling holes with fill material, grading, and re-establishing water bars when necessary. Road construction would be completed with a Cat D7 or equivalent equipment.

2.1.3 Drill Sites and Drilling Procedures

The standard drill site for the RC drill rig would measure approximately 30 feet wide by 70 feet long. The sumps would be constructed adjacent to the footprint of the drill sites to contain cuttings and manage drilling fluids and would typically measure ten feet wide by 20 feet long by 6.75 feet deep. The proposed disturbance associated with the drill sites has been categorized by slope angle and the total disturbance of each segment calculated accordingly.

Exploration drill holes would be drilled to an average depth of approximately 1,500 feet. NUG would conduct exploration drilling with up to two drill rigs. Drill holes would be vertical or angled and drilled with a RC and/or core drill rig. Drill holes would be abandoned per NAC 534.4369 and 534.4371. If ground water is encountered, the hole would be plugged pursuant to NAC 534.420. All drill holes would be plugged prior to the drill rig leaving the site. A single drill hole may remain open at any one time for each drill rig that may be on site. Based on existing drill holes in the Project Area, the depth to ground water ranges between 400 and 1,000 feet depending on the surface elevation.

NUG would follow standard drilling procedures and require a geologist to be on site throughout drilling activities. The duties of the geologist would 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 would travel to and from the drill site in a separate 4WD pickup truck.

Standard drill rig crews would consist of a drill operator and one or two helpers. The helpers normally remove and box the recovered core samples and the cuttings from RC 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 up to three 4WD vehicles per drill rig.

NUG may install ground water monitoring wells under subsequent phases to track water levels and water quality. In addition, NUG may drill up to four wells prospecting for extraction water in subsequent phases. When possible, existing exploration drill sites would be used for the monitoring and extraction wells so the site dimensions would typically be 30 feet wide by 70 feet long. All ground water monitoring wells and water extraction wells would be plugged in accordance to NAC 534.420. No ground water monitoring or extraction wells are planned under Phase I. The purpose of the wells would be to contribute to baseline data collection in support of potential subsequent mineral development activities that may occur in the Project Area, based on positive drilling results.

Geotechnical drill borings may be completed with a small auger drill under subsequent phases. No geotechnical borings are planned under Phase I.

Test pits to study geology or soil may be constructed as necessary for geologic mapping and sampling, geotechnical sampling, and collection of bulk samples under subsequent phases. No trenches are planned under Phase I.

2.1.4 Hazardous Materials

Hazardous materials utilized at the Project Area would include diesel fuel, gasoline, and lubricating grease. Approximately 500 gallons of diesel fuel would be stored in fuel delivery systems on vehicles and drill rigs. Approximately 100 gallons of gasoline would be stored in fuel delivery systems for light vehicles. Approximately 100 pounds of lubricating grease would be stored on the drill rigs or transported by drill trucks. All containers of hazardous substances would be labeled and handled in accordance with Nevada Department of Transportation (NDOT) and MSHA. In the event that a reportable quantity of hazardous or regulated materials, such as diesel fuel, is spilled, measures would be taken to control the spill, and the NDEP and the Emergency Response Hotline would be notified, as required. If any oil, hazardous material, or chemicals are spilled during operations, they would be cleaned up in a timely manner. After clean up, the oil, toxic fluids, or chemicals and any contaminated material would be removed from the site and disposed of at an approved disposal facility.

2.1.5 Water Management Plan

Daily water requirements would depend on the type of drill and the number of drills active at any time. A RC drill rig requires approximately 3,000 gallons per 12-hour shift, while a core drill rig uses approximately 5,000 gallons of water per 12-hour shift. RC rigs work only one shift per day whereas the core rig runs two shifts; therefore, the daily drill water requirement could be as much as 13,000 gallons per day. In addition, depending on conditions, water may be required to control dust on the roads. This could be as much as 5,000 gallons per day depending on the location of the drills. Therefore, daily water requirements could total as much as 18,000 gallons per day. NUG is currently obtaining water from Barrick's Lodge at Pine Valley through a verbal agreement. Alternatively, water is available through Tonkin Springs mine.

Drill fluids would be managed with the use of sumps at each drill site. BMPs for sediment control would be utilized during construction, operation, and reclamation to minimize sedimentation from disturbed areas. Proposed construction and drilling activities would avoid springs and seeps, if present. In order to facilitate drainage and prevent erosion, all bladed roads would have waterbars constructed, as needed, at BLM-recommended spacing.

Sediment control structures may include, but not be limited to, fabric or certified weed-free straw bale filter fences, siltation or filter berms, mud pits, and downgradient drainage channels in order to prevent unnecessary or undue degradation to the environment. Sediment traps, constructed as necessary, within the drill pad disturbance, would be used to contain drill cuttings.

2.1.6 Surface Occupancy

Under 43 CFR 3710 Subpart 3715.0-5, occupancy is defined as full or part-time residences on the public lands. It also encompasses 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.

Surface occupancy activities under this Project, including those activities covered under 43 CFR 3710 Subpart 3715.0-5, may include the following:

- The development of ground water monitoring wells, which would each have surface features including casing, well head cover, and protection posts as needed;
- The development of ground water piezometers, which would each have surface features including casing, electrical connections, and protection posts as needed; or
- The development of ground water extraction wells, which would each have surface features including casing, well head covers, electrical connections, and protection posts as needed.

The development of a monitoring well system and exploration for potential water supplies would be implemented under subsequent phases of the Project.

2.1.7 Reclamation Plan

Reclamation would be completed to the standards described in 43 CFR 3809.420 and NAC 519A. Reclamation would meet the reclamation objectives outlined in the U.S. Department of Interior Solid Minerals Reclamation Handbook #H-3042-1 (BLM 1992a), revegetation success standards per BLM/NDEP “Revised Guidelines for Successful Mining and Exploration Revegetation” (BLM 1999), and Surface Management Handbook H-3809-1 (BLM 2012a). Overland travel and existing roads would be utilized as much as possible, minimizing the need for road construction. All NUG drill sites, sumps, overland travel, and road construction would be recontoured and reseeded.

Reclamation would be designed to achieve post-exploration land uses consistent with the BLM's land use management plans for the area, which are outlined in the Shoshone-Eureka RMP (BLM 1986a). Reclamation is intended to return disturbed land to a level of productivity comparable to pre-exploration levels. Post-exploration land use includes wildlife habitat, livestock grazing, hunting, and dispersed recreation. The post-exploration land use is not expected to differ from the pre-exploration land use.

During seasonal closure of the Project and periods of inactivity between drilling phases, reclamation would involve filling sumps, cleaning sites, and maintaining the overall safety of the Project Area. The BLM and NDEP would be notified prior to any periods of inactivity greater than 120 days.

After exploration activities are completed, reclamation would involve regrading disturbed areas related to this Project to their approximate original contour and seeding using the approved reclamation seed mixture and application rates furnished by the BLM (Table 2.1-2). Overland travel routes would be scarified and reseeded, if necessary. Yearly visits to the site would be conducted to monitor the success of the revegetation for a period of up to three years or until revegetation success has been achieved.

Table 2.1-2: Approved BLM Seed Mix

Species		Application Rate (pounds PLS ¹ /acre)
Common Name	Scientific Name	
Wyoming big sagebrush	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	0.10
Four-wing saltbush	<i>Atriplex canescens</i>	2.00
Forage kochia	<i>Kochia prostrata</i>	0.25
Nevada Mormon tea	<i>Ephedra nevadensis</i>	4.00
Scarlet globemallow	<i>Sphaeralcea coccinea</i>	0.50
Palmer penstemon	<i>Penstemon palmeri</i>	1.00
Lewis flax	<i>Linum lewisii</i>	1.00
Indian ricegrass	<i>Achnatherum hymenoides</i>	2.00
Great Basin wildrye	<i>Leymus cinereus</i>	2.00
Squirreltail	<i>Elymus elymoides</i>	2.00
Total		14.85

¹Pure Live Seed

The post-exploration and post-reclamation topography would be essentially the same as the pre-exploration topography because only limited amounts of linear surface disturbance are planned.

Exploration activities would occur over approximately ten years. All reclamation work, with the exception of revegetation monitoring, would be completed no later than two years after the completion of activities under this Project. NUG would conduct concurrent reclamation of disturbed areas once it is determined that the disturbance is no longer required for Project activities.

Table 2.1-3 outlines the anticipated reclamation schedule on a monthly basis, which would be followed to achieve the reclamation goals set forth above. Regrading would occur between April and December and would be done within two years of Project completion. Revegetation activities (seeding) are limited by the time of year during which they could be effectively implemented. Seeding would be completed between October and December and would occur within two years of Project completion. Site conditions and/or yearly climatic variations could require that this schedule be modified to achieve revegetation success. Monitoring could occur between April and the end of September to determine revegetation success. In general, monitoring would be conducted within three years following regrading and reseeding. Additional reclamation activities include the abandonment of the water wells and the removal of all equipment, supplies, and materials brought onto public land at the end of the Project life.

Table 2.1-3: Anticipated Reclamation Schedule

Techniques	Quarter				Year(s)
	1 st Jan – Mar	2 nd April – June	3 rd July – Sept	4 th Oct - Dec	
Regrading					Within two years of Project completion
Seeding					Within two years of Project completion
Monitoring					Three years beyond grading and reseeding

2.1.7.1 Noxious Weed Control Measures

To prevent and control the introduction and spread of noxious weeds within the Project Area during reclamation activities, NUG would implement the following prevention and control practices:

- Soil (growth media) disturbance would be minimized to the extent practicable, consistent with Project objectives. Growth media would be stockpiled and used in reclamation;
- Disturbed sites would be revegetated as soon as practicable when exploration work is completed. Revegetation may include topsoil replacement, planting, seeding, fertilization, liming, and weed-free mulching as necessary; and
- The seed mixture would be certified PLS and weed free. Straw bales used for erosion control would also be certified as weed free.

2.1.7.2 Drill Hole Plugging

Drill holes would be plugged in accordance with Nevada Revised Statute (NRS) 534, 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. No drill holes would be left open at the end of the Project.

If the casings are set in a borehole, either the boreholes would be completed as wells and plugged pursuant to NAC 534.420 or the casings would be completely removed from the boreholes and then be plugged pursuant to NAC 534.4369 and NAC 534.4371. 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.

Geotechnical auger holes would be backfilled with drill cuttings and surface material.

2.1.7.3 Regrading and Reshaping

Regrading and reshaping of all constructed drill sites, including sumps, water well sites, monitoring well sites, constructed roads, and test pits would be completed to approximate the surrounding topography. Fill material would be pulled onto the roadbeds to fill the road cuts and restore the slope to natural contours. Roads and drill sites would be regraded and reshaped with an excavator. Overland travel routes are estimated to have a ten-foot travel width (the width of two tracks). For overland travel routes and overland pads, tire tracks (e.g., trails created by

overland travel and track rigs) would be lightly scarified and left in a rough state as necessary to relieve compaction, inhibit soil loss from runoff, and prepare the seed bed.

Should any drainage be disturbed, they would be re-shaped to approximate the pre-construction contours. The resulting channels would be of the same capacity as up and downstream reaches and would be made to prevent erosion and ultimately revegetated. Following completion of earthwork, all disturbed areas would be broadcast seeded.

2.1.7.4 Handling of Topsoil

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 part of the fill. 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.

2.1.7.5 Revegetation

Generally, seedbed preparation and seeding would take place in the fall after regrading of disturbed areas. All reclaimed areas would be broadcast seeded with a cyclone-type bucket spreader or a mechanical blower. Broadcast seed would be covered by harrowing, raking, or other site-specific appropriate methods, as necessary, to provide seed cover and enhance germination. Reclaimed surfaces would be left in a textured or rough condition (e.g., small humps, pits, etc.) to enhance moisture retention and revegetative success while minimizing erosion potential.

The seed list, provided by the BLM and shown in Table 2.1-2, is based on known soil and vegetative conditions and was selected to establish a plant community that would support the post-exploration land use. The mix is designed to provide species that can exist in the environment of northeastern Nevada, are proven species for revegetation, or are native species found in the plant communities prior to disturbance. Broadcast seeding would be at a rate of 14.85 pounds of PLS per acre. Changes or adjustments to the reclamation plant list or application rate would be completed in consultation with and approval by the BLM and BMRR. The seed mixture would be certified PLS and weed free. Straw bales used for erosion control would also be certified as weed free.

Timing of revegetation activities is critically important to the overall success of the program. Seeding activities would be timed to take advantage of optimal climatic periods and would be coordinated with other reclamation activities. In general, 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. Early spring seeding may be utilized for areas not seeded in the fall. In either case, seeding would not be completed when the ground is frozen or snow covered.

2.1.8 Monitoring

Monitoring of the drill sumps includes periodic visual inspections during drill operations to ensure that the drill cuttings are contained. Should the observed condition indicate that the sump containment is inadequate, additional sump capacity would be built and/or incorporated into the drilling fluid management system. Monitoring associated with reclamation activities is addressed in the Reclamation Plan (Section 2.1.7).

Monitoring would include periodic visual inspections during road and drill site construction, drill operations, and reclamation.

2.1.9 Applicant-Committed Environmental Protection Measures

NUG would commit to the following Environmental Protection Measures (EPMs) 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 BMRR mining reclamation regulations, as well as water, air quality, and other environmental protection regulations and guidelines.

Air Quality

- Emissions of fugitive dust from disturbed surfaces would be minimized by the application of water from a water truck as a method of dust control. A Surface Area Disturbance (SAD) Permit would be required when surface disturbance exceeds 20 acres in size. Included in a SAD permit is a Dust Control Plan.

Cultural and Paleontological Resources

- Pursuant to 43 CFR 10.4(g), NUG 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, NUG would immediately stop all activities in the vicinity of the discovery and not commence again until a notice to proceed is issued by the BLM-authorized officer.
- NUG would avoid all National Register of Historic Places (NRHP) eligible sites and/or contributing elements of eligible cultural Districts by a buffer zone of 100 feet. Prior to NUG initiating activities under each phase, the BLM would review the work plan for each phase to ensure the protection of all NRHP-eligible sites and/or contributing elements of eligible Districts. If deemed necessary by the BLM, NUG would place a qualified archaeologist on site during surface disturbing activities near known cultural resources to monitor Project implementation and ensure contributing elements of eligible cultural Districts/sites are avoided.
- NUG would inform all field personnel of the Archaeological Resources Protection Act of 1979 (ARPA) and the Native American Graves Protection and Repatriation Act of 1990 (Public Law [P.L.] 101-601) (NAGPRA) responsibilities and their associated penalties.

- Any cultural resource discovered by NUG, or any person working on their behalf, during the course of activities on federal land would be immediately reported to the authorized officer by telephone, with written confirmation. The permit holder would suspend all operations in the immediate area of such discovery and protect it until an evaluation of the discovery can be made by the authorized officer. This evaluation would determine the significance of the discovery and what mitigation measures are necessary to allow activities to proceed. NUG would be responsible for the cost of evaluation and mitigation. Operations would resume only upon written authorization to proceed from the authorized officer.
- NUG would not knowingly disturb, alter, injure, or destroy any scientifically important paleontological deposits. In the event that previously undiscovered paleontological resources are discovered by NUG in the performance of any surface disturbing activities, the item(s) or condition(s) would be left intact and immediately brought to the attention of the authorized officer of the BLM. If significant paleontological resources are found, avoidance, recordation, and/or data recovery would be required.

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 proposed Project activities start or cause a wildland fire, NUG would be responsible for all the costs associated with the suppression. The following precautionary measures would be taken to prevent and report wildland fires:
 - All vehicles would carry fire extinguishers and a minimum of ten gallons of water;
 - Adequate fire-fighting equipment (i.e., shovel, Pulaski, extinguishers), and a minimum ten gallons of water would be kept at each drill site;
 - Vehicle catalytic converters would be inspected often and cleaned of brush and grass debris;
 - Welding operations would be conducted in an area free from or mostly free from vegetation. A minimum of ten gallons of water and a 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. Welding aprons would be used when conditions warrant (i.e., during red flag warnings);
 - Wildland fires would immediately be reported to the BLM Central Nevada Interagency Dispatch Center at (775) 623-3444. Information reported would include the location (latitude and longitude if possible), fuels involved, time started, who or what is near the fire, and the direction of fire spread; and
 - When conducting operations during the months of May through September, the BLM Battle Mountain District Office, Division of Fire and Aviation would be

contacted at (775) 635-4000 to determine if any fire restrictions are in place for the Project and to provide approximate beginning and ending dates for Project activities.

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.
- All regulated wastes would be removed from the Project Area and disposed of in a state, federal, or local designated area.
- No solid waste would be permitted in sumps.
- 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 three cubic yards of impacted material or any quantity if a water body is impacted), or a reportable quantity for hazardous waste is released based on the Federal Environmental Protection Agency guidelines established under Title III List of Lists (40 CFR Part 302), the NDEP would be notified within 24 hours, and the appropriate remedial actions and confirmation sampling would be conducted under direction of the NDEP.

Migratory Birds

- In order to avoid potential impacts to breeding migratory birds, 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 July 31 for raptors, and April 1 through July 31 for other migratory birds and burrowing owls). 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 active 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: 1) 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.

Noxious Weeds, Invasive and Non-native Species

- Noxious weeds would be controlled through implementation of the following BMPs: concurrent reclamation efforts; operator control including washing of equipment; removal of invasive, non-native, and noxious weeds on reclaimed areas; and avoiding areas of known invasive, non-native, and noxious weeds during periods when the weeds could be spread by vehicles.

Public Safety and Access

- 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.
- Drill sites, sumps, and excavations would be reclaimed as soon as practicable after completion of sampling and logging.
- Any survey monuments, witness corners, or reference monuments would be protected to the extent economically and technically feasible.
- Final reclamation of overland travel routes, sumps, and drill sites would consist of, if required, fully recontouring disturbances to their original grade, and reseeding in the fall season immediately following completion of exploration activities.
- In the event that any existing roads are damaged as a result of NUG activities, NUG would return them to their original condition.

Water Quality

- All drill holes would be plugged in accordance with NRS 534, NAC 534.4369 and NAC 534.4371 with the exception of drill holes collared with a mud rotary or RC drill rig and completed with a core rig, which would be plugged prior to the core rig moving from the drill site. If any drill hole produces artesian flow, the drill hole would be contained pursuant to NRS 534.060 and NAC 534.378 and would be sealed by the method described in NAC 534.4371. If casings are set in a drill hole, either the drill hole must be completed as a well and plugged pursuant to NAC 534.420, or the casings would be completely removed from the drill hole and then plugged in accordance with NAC 534.4369 and NAC 534.4371.
- Storm water BMPs would be used at construction sites to minimize storm water erosion.
- Drill cuttings would be contained on site and fluids managed utilizing appropriate control measures. Sediment traps would be used as necessary and filled at the end of the drill program.
- NUG would follow the Spill Contingency Plan in Appendix D of the Plan.
- Only nontoxic fluids would be used in the drilling process.

Wildlife

- 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 or constructed with a sloped end for easy egress.
- In order to reduce impacts to greater sage-grouse preliminary priority habitat (PPH), NUG would provide the following EPM: Using hand-thinning methods (i.e., use of chainsaw, lop and scattering of slash, etc.) to remove piñon-juniper trees in areas that are

determined to be actively encroaching into PPH. Piñon-juniper would be removed from three acres of habitat for every one acre disturbed within PPH in the Project Area. In order to minimize impacts to breeding and nesting greater sage-grouse, piñon-juniper thinning would not occur from March 1st through June 30th. To minimize impacts to migratory birds, site surveys would be conducted by a qualified biologist to determine the presence of nesting birds if thinning activities are proposed between July 1st and July 31st. Preferred locations for piñon-juniper removal include areas that have been identified by the BLM, NDOW, or research studies as important migration corridors, riparian areas, or nesting habitat. Preferred treatment locations include areas that would directly benefit greater sage-grouse, such as areas adjacent to (but still located inside the Project Area boundary) the Tonkin Road and Buckhorn Road lek. NUG would consult with the BLM prior to implementing any piñon-juniper removal.

- To minimize potential impacts to cultural resources as a result of these measures, several additional actions would be undertaken. As specific sites for piñon-juniper removal are identified, a BLM staff archaeologist would evaluate the potential of the area for cultural resources, and would undertake avoidance measures as needed. To reduce the risk of unauthorized collection, field crews would be instructed by an agency archaeologist regarding the importance of cultural resources and the possible penalties under the ARPA for the destruction of archaeological resources. In order to decrease the risk of inadvertent damage to fragile remains, crews would also be instructed to recognize wood and brush cultural resources.

Vegetation

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

2.2 No Action Alternative

In accordance with BLM NEPA guidelines H-1790-1, Chapter V (BLM 2008a), 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 for 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 and BMRR. NUG would continue Notice-level exploration activities (NVN-089695) in the Project Area on public land. The area would remain available for future mineral exploration and mining activities or for other purposes, as approved by the BLM.

2.3 Alternatives Considered but Eliminated from Detailed Analysis

2.3.1 Cross Country/Overland Travel Only Alternative

This alternative would utilize only overland or cross country travel and would not allow for construction of new roads. Utilization of cross country travel exclusively for the Project would

eliminate much of the exploration area due to topographic constraints. However, the Proposed Action incorporates the use of cross country travel and would utilize this method where feasible.

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. Utilization of existing roads only would eliminate portions of the exploration area. Furthermore, 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.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

The purpose of this section of the EA is to describe the existing environment of the Project Area, as well as environmental consequences from implementation of the Proposed Action or any of the listed alternatives.

Notice-level exploration activities under NVN-089695 could include five acres of surface disturbance, which could occur at any time prior to a decision being made on the proposed action analyzed in the EA. The Notice-level surface disturbance includes overland travel, constructed roads, and constructed drill sites. This existing baseline condition of the Project Area serves as the basis for the analysis of the Proposed Action.

Supplemental Authorities that are subject to requirements specified by statute or Executive Order (EO) must be considered in all BLM environmental documents. The elements associated with the supplemental authorities listed in the NEPA Handbook (BLM 2008a, Appendix 1) and in the Nevada Instruction Memorandum (IM) 2009-030, Change 1, are listed in Table 3.1-1. The table lists the elements and the determination whether the element is present in the Project Area and whether the element would be affected by the Proposed Action.

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/May Be Affected	Rationale/Reference Section
Air Quality			X	The Proposed Action may affect air quality. See Section 3.2.1.
Areas of Critical Environmental Concern	X			This element is not present within the Project Area or vicinity and is not further analyzed in this EA.
Bald and Golden Eagles	X			There were no bald or golden eagle individuals, nests, or potential nesting habitat identified within the Project Area or four-mile buffer; therefore, this element is not further analyzed in this EA.
Cultural Resources		X		The Proposed Action would not affect cultural resources. See Section 3.2.2.
Environmental Justice	X			Based on a review of existing baseline data, no minority or low-income groups would be disproportionately affected by health or environmental effects as a result of implementation of the Proposed Action. This element is not present within the Project Area or vicinity and is not further analyzed in this EA.
Farm Lands (Prime or Unique)	X			This element is not present within the Project Area or vicinity and is not further analyzed in this EA.

Supplemental Authority Element	Not Present	Present/ Not Affected	Present/May Be Affected	Rationale/Reference Section
Fish Habitat	X			Native fish habitat is not present within the Project Area or vicinity and is not further analyzed in this EA.
Floodplains	X			This element is not present within the Project Area or vicinity and is not further analyzed in this EA.
Forests and Rangelands (Healthy Forests Restoration Act [HFRA] projects only)	X			This Project does not meet the requirements to qualify as an HFRA project; therefore, this element is not further analyzed in this EA.
Human Health and Safety (Herbicide Projects)	X			The Project may use herbicides to eradicate noxious weeds; however, EO 13045, "Protection of Children from Environmental Health Risks and Safety Risks," would not apply to this Project as there would be no children on the site during application of the herbicides.
Migratory Birds			X	See Section 3.2.5.
Native American Religious Concerns			X	See Section 3.2.6.
Noxious Weeds, Invasive, and Non-native Species			X	See Section 3.2.7.
Threatened or Endangered Species	X			Federally threatened and endangered species have been determined not to be present within the Project Area. See Section 3.2.12 (Special Status Species) for a further discussion.
Wastes – Hazardous/Solid		X		The Proposed Action would not affect hazardous or solid wastes. See Section 3.2.15.
Water Quality, Surface and Ground		X		The Proposed Action would not affect water quality. See Section 3.2.16.
Wetlands and Riparian Zones	X			This element is not present within the Project Area or vicinity and is not further analyzed in this EA.
Wild and Scenic Rivers	X			This element is not present within the Project Area or vicinity and is not further analyzed in this EA.
Wilderness/Wilderness Study Areas (WSAs)/lands with wilderness characteristics	X			Wilderness or WSAs are not present within the Project Area or vicinity. The BLM conducted a lands with wilderness characteristics inventory of the Project Area on August 5, 2014, and determined there are no lands with wilderness characteristics in the Project Area. These elements are not further analyzed in this EA.

Elements present are analyzed in Section 3.2, including justification for the elements present and determined not affected by the Proposed Action. Those elements listed under the supplemental

authorities that do not occur in the Project Area and not affected are not evaluated further in this EA, based on the rationale provided in Table 3.1-1.

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 considered for this EA are listed in Table 3.1-2 below.

Table 3.1-2: Resources or Uses Not Associated with Supplemental Authorities

Other Resources or Uses	Not Present	Present/ Not Affected	Present/May Be Affected	Rationale/Reference Section
Fire Management		X		The Proposed Action would not affect fire management. See Section 3.2.3.
Forestry and Woodland Resources			X	This resource is present in the form of piñon-juniper within greater than 47 percent of the Project Area. This resource is discussed in Section 3.2.4.
Geology and Mineral Resources		X		The Proposed Action would not affect geology and mineral resources. See Section 3.2.5.
Lands and Realty	X			There are no rights-of-way (ROWS) within the Project Area; therefore, this resource is not further addressed in this EA.
Paleontological Resources	X			Based on a detailed study of the paleontological resource potential, no fossil locations or potential has been identified within the geologic units by the Proposed Action. This is due to the highly altered and structurally deformed nature of the sediments and the complete lack of fossil potential in the volcanic rocks; therefore, this resource is not further addressed in this EA. However, Section 2.1.9 includes a protection measure for undiscovered paleontological resources.
Rangeland Management		X		The Proposed Action would not affect rangeland management. See Section 3.2.9.
Recreation			X	See Section 3.2.10.
Social Values and Economics			X	NUG would employ up to eight workers at any one time during the ten-year life of the Project. See Section 3.2.11.
Soils			X	See Section 3.2.12.
Special Status Plant Species	X			There were no special status plant species found in the Project Area during 2013 field surveys.
Special Status Wildlife Species			X	See Section 3.2.13 for a discussion of special status wildlife species.

Other Resources or Uses	Not Present	Present/ Not Affected	Present/May Be Affected	Rationale/Reference Section
Vegetation			X	See Section 3.2.14.
Visual Resources			X	The Proposed Action may affect visual resources. See Section 3.2.15.
Wild Horses and Burros			X	See Section 3.2.18.
Wildlife			X	See Section 3.2.19.

Present resources or uses are discussed and analyzed in Section 3.2, including justification for the resources present and determined not affected by the Proposed Action. Those other resources listed that do not occur in the Project Area and would not be affected are not evaluated further in this EA, based on the rationale provided in Table 3.1-2.

The potential effect of the No Action Alternative on both supplemental authorities and other resources or uses is discussed in Section 3.3.

3.2 Effects of the Proposed Action

3.2.1 Air Quality

3.2.1.1 Affected Environment

Air Quality

The Federal Clean Air Act is the primary controlling legislation over air quality. Ambient air quality and the emission of air pollutants are regulated under both federal and state laws and regulations. Regulatory air standards that are potentially applicable to the Project include the following: National Ambient Air Quality Standards (NAAQS) and the Nevada State Ambient Air Quality Standards (NSAAQS).

The Bureau of Air Pollution Control (BAPC) is the agency in the State of Nevada delegated with 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 NSAAQS. The NSAAQS are generally identical to the NAAQS 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 above mean sea level (amsl); b) a hydrogen sulfide standard; c) the revised NAAQS for particulate matter of aerodynamic diameter less than 2.5 microns (PM_{2.5}); d) the revised NAAQS for particulate matter of aerodynamic diameter less than ten microns (PM₁₀); e) the revised NAAQS for sulfur dioxide (SO₂) and nitrogen dioxide; f) ozone (Nevada has yet to adopt the new and revised federal standards); and g) a violation of state standards occurring 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 NSAAQS, the BAPC is responsible for the Prevention of Significant Deterioration (PSD) program, enforcing the New Source Performance Standards, and implementing the Federal Operating Permit Program (Title V) throughout the State of Nevada.

The attainment status relative to the NSAAQS within the Project Area is determined by monitoring ambient levels of criteria pollutants. An attainment or unclassified designation means that no violations of NSAAQS or NAAQS have been documented in the region. The Project Area is located in the Pine Valley hydrographic basin, which is considered in attainment relative to the NAAQS and is not a PSD-triggered basin for any pollutant. The existing air quality is typical of largely undeveloped regions of the western United States (US) with limited sources of pollutants.

Climate and Meteorology

The Project Area is located at the northern end of the Simpson Park Mountains, with Rocky Hills to the west, and Red Hill to the east. The elevations within the Project Area range from 5,961 feet amsl to 6,850 feet amsl. According to the Western Regional Climate Center (WRCC), the average maximum temperature at the Beowawe University of Nevada Ranch, located approximately nine miles northeast of the Project Area, is approximately 88 degrees (°) Fahrenheit (F) in July, and the average minimum temperature is approximately 13° F in January. The average annual precipitation is approximately ten inches and tends to peak in May (WRCC 2013).

Current Conditions

The BLM published the final Rapid Ecoregional Assessment (REA) for the Central Basin and Range in June 2013 (Comer et al. 2013). REAs examine climate change and other widespread environmental influences that are affecting western landscapes. REAs look across an ecoregion to more fully understand ecological conditions and trends; natural and human influences; and opportunities for resource conservation, restoration, and development. The REAs provide regional information that can inform local management efforts.

Over the past 100 years, the weather, vegetation cover, and wildfire regimes of the Central Basin and Range ecoregion have changed, suggesting a change in the ecoregion's climate regime. Changes in temperature and precipitation have resulted in changes to vegetation cover and wildfire regimes. Changes are expressed in species composition, changes in vegetation communities, and increasing quantities of invasive species. Many areas once dominated by sagebrush have piñon-juniper encroachment as well as downy brome (cheatgrass).

Greenhouse Gas Emissions

Greenhouse gases (GHGs) are those that allow short-wave solar radiation to enter the earth's atmosphere but absorb long-wave infrared radiation reemitted from the earth's surface. Greenhouse gases can affect climate patterns, which in turn can affect resource management.

Gases exhibiting greenhouse properties come from both natural and human sources. Water vapor, carbon dioxide, methane, and nitrous oxide are examples of greenhouse gases that have both natural and man-made sources, while other greenhouse gases, such as chlorofluorocarbons, are exclusively man-made.

Sources of greenhouse gas emissions vicinity of the Project Area are wildfires and prescribed burns, vehicles (including OHVs), construction and operation for mineral and energy development, and grazing livestock, wild horses, and burros. To the extent that these activities increase, greenhouse gas emissions are also likely to increase.

Climate Change

Climate represents the long-term statistical characterization of daily, seasonal, and annual weather conditions such as temperature, relative humidity, precipitation, cloud cover, solar radiation, and wind speed and direction. Climate is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years. A region's climate is affected by latitude, terrain, and altitude, as well as nearby water bodies and their currents.

Warmer and more arid conditions, coupled with a shorter snow season, have led to limited water supplies and severe drought in parts of the state. By 2100, the average temperature in Nevada is predicted to increase by 3°F to 4°F in the spring and fall and by 5°F to 6°F in the summer and winter. El Niño events are predicted to increase in frequency and duration as a result of global climate change. These temperature changes would affect evaporation and precipitation in the state, likely resulting in the decreased availability of water (National Conference of State Legislatures 2008).

In the Central Basin and Range ecoregion, climate models suggest there is no strong trend toward either wetter or drier conditions either in the near future (through the 2020s) or in the long term (through the 2050s; Comer et al. 2013). However, models show significant increases in maximum monthly temperatures by 2020, primarily in the summer months (July, August, and September). The highest maximum temperature increase projected is 6 °F. These increases are predicted to occur mostly in the southern and northeastern edges of the ecoregion. Forecasts for 2060 predict substantial increases in maximum temperature for all months. Similar to forecasts for 2020, the greatest increases are predicted during the summer months and along the southern and northeastern edges of the ecoregion (Comer et al. 2013). Model forecasts for minimum temperatures show a considerable change in both rate and magnitude over most of the study area. July through September showed the greatest degree of change over most of the region.

Data for precipitation suggest no strong trend toward either wetter or drier conditions in any month for the ecoregion. With the exception of a slight increase in summer monsoon rains toward the south and east, there were no significant forecasted trends in precipitation for any other months in either the near-term (2020s) or midcentury (2050s) projections (Comer et al. 2013).

Potential effects of these forecasts on the landscape could include increased fuel loads in higher elevations, increased frequency and duration of droughts, expansion of invasive species in higher elevations, increased wind erosion, and changes in wildfire regimes (Comer et al. 2013). However, the potential effects of the Project on climate change are beyond the scope of this EA and are not further analyzed in this EA.

3.2.1.2 Environmental Consequences

The Project has the potential to disturb approximately 100 acres; however, this disturbance would be completed in phases. Travel on access roads and Project-related activities within the Project Area would create emissions, which would have a potential impact on air quality. Fugitive dust, in the form of PM₁₀ and PM_{2.5}, would be caused by the operation of the following equipment: up to two drill rigs; one bulldozer; one backhoe, two service trucks, two water trucks, and three light pickup trucks. Vehicle emissions, in the form of SO₂, nitrogen oxide, CO, and volatile organic compounds, would occur anytime the internal combustion engines on the vehicles are operating. Table 3.1-3 shows the tons of emissions of the above identified pollutants.

Table 3.1-3: Fugitive Dust and Combustion Emissions Associated with the Project, Tons per Year

Project Emissions Summary						
Emission Type	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	VOCs
Fugitive Emissions (Dust and Tailpipe)	9.64	1.22	0.01	4.23	3.83	0.22
Total	9.64	1.22	0.01	4.23	3.83	0.22

In addition to the criteria listed in Table 3.1-3, there would be a total of approximately 0.002 ton per year of hazardous air pollutants (HAPs) and approximately 752 tons per year of GHGs. All exploration activities with surface disturbance exceeding 20 acres are required to obtain a Surface Area Disturbance (SAD) permit from the BAPC, which includes a Dust Control Plan. The BAPC's issuance of the SAD permit and requirement that the Project operate in compliance with the Dust Control Plan are intended to ensure that fugitive dust emissions are minimized to the maximum extent possible using BMPs. The Dust Control Plan would stipulate that travel on roads within the Project Area be conducted at prudent speeds and include watering roads to suppress dust, as necessary, to minimize the potential effects of fugitive dust on air quality. The amount of emissions associated with combustion of a maximum of two drill rigs and their support vehicles over a 12-hour period would be equivalent to eight vehicles traversing from one side of Nevada to the other on Interstate 80. In addition, the emissions associated with the exploration Project would occur in a rural area where there are minimal emissions generated from other activities. Combustion emissions from motor vehicles are regulated by the EPA through the limiting of emissions during the manufacture of the vehicles and then regular maintenance of the vehicles. The amount of emissions from the Project would be inconsequential. Through the implementation of the EPMs, there would be no appreciable impacts to air quality. Therefore, this resource element is not carried forward in additional analysis.

3.2.2 Cultural Resources

3.2.2.1 Affected Environment

The area of potential effect consists of approximately 1,780 acres, and includes the entire Project Area. Based on the results of a Class III cultural resources inventory conducted by ASM Affiliates (Sprengeler et al. 2013), there were 35 newly identified archaeological sites and

22 isolates identified. In addition, two previously recorded lithic scatter sites were updated. The 35 newly identified sites included prehistoric lithic scatters, habitation sites, hunting blinds, a horse trap, historic refuse scatters, and a historic road segment. The two updated lithic scatter sites and 33 out of 35 of the newly identified sites were recommended as not eligible for listing in the NRHP under any evaluation criteria. The 22 isolated finds included flaked stone artifacts, historic cans, and a prospect pit. Based on the 2009 BLM and State Historic Preservation Office protocol agreement, isolated finds are categorically excluded from inclusion on the NRHP.

3.2.2.2 Environmental Consequences

There are two NRHP-eligible cultural resource sites within the Project Area (Sprengeler et al. 2013). One site is a historic horse trap that is perceived eligible under Criterion D and potentially eligible under Criteria A and B; the second site is a habitation site dating to the Late Prehistoric period and is eligible under Criterion D only. NUG has identified that complete avoidance of the two sites would occur during all exploration-related activities. In addition, inadvertent discoveries of previously undetected cultural resources would be treated as required under 43 CFR 10.4 and 43 CFR 3908.420(8)(b). Any such discovery would be immediately reported to the authorized BLM officer. All operations in the immediate area of the discovery would be suspended, and the site would be protected until the authorized officer could develop an appropriate plan for management of the resource. Through implementation of EPMs outlined in Section 2.1.9, no appreciable impact is expected.

3.2.3 **Fire Management**

3.2.3.1 Affected Environment

No fuel reduction or habitat enhancement projects have been conducted or are proposed within the Project Area; however, the BLM has ongoing hazardous fuels reduction and habitat enhancement projects in the Project Area vicinity.

3.2.3.2 Environmental Consequences

Implementation of the Proposed Action would be coordinated with the BLM's MLFO Manager in order to ensure the safety of NUG personnel during all periods of prescribed fire activity in the area. Based on the EPMs outlined in Section 2.1.9, and the fact that the Project Area would continue to be accessible, impacts to fire management are not anticipated. In addition, reclamation measures include seeding with vegetation types that may be more favorable than other vegetation types to fire avoidance and suppression in the long term.

No impacts to fire management from the Proposed Action are anticipated; therefore, fire management is not carried forward for additional analysis.

3.2.4 **Forestry and Woodland Resources**

3.2.4.1 Affected Environment

The Project Area includes 833 acres of singleleaf piñon and Utah juniper. This number does not include a specific determination of singleleaf piñon and Utah juniper encroachment into the

sagebrush communities for the Project because a quantitative assessment was not completed during the field survey. Noncommercial harvest of live, as well as dead and downed piñon or juniper for use as fuel wood, fence posts or Christmas trees, is permitted throughout the MLFO under the current Land Use Plan. Commercial harvest of Christmas trees is also currently permissible within portions of the proposed Project Area. Both commercial and personal-use harvest of piñon pine nuts occur within the proposed Project Area.

The proposed sage grouse EPM does not constitute a comprehensive piñon-juniper management plan for the proposed Project Area. The proposed greater sage-grouse EPM represents a relatively low cost, limited scope effort, to reduce or reverse early-stage piñon-juniper encroachment of greater sage-grouse habitat, and would be limited exclusively to early stage expansion woodlands as defined by the Intermountain Society of American Foresters (ISAF 2013).

3.2.4.2 Environmental Consequences

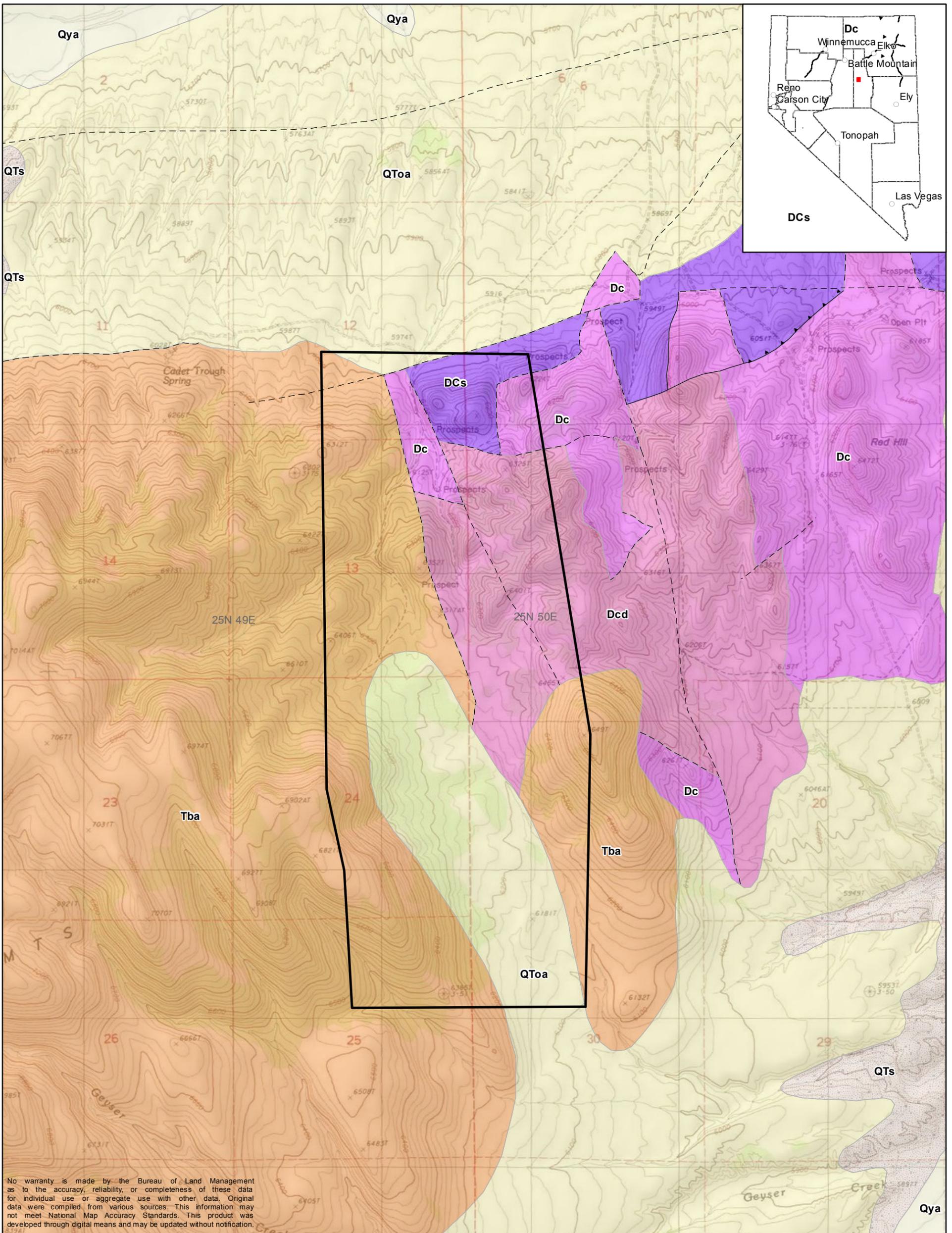
The proposed implementation of the greater sage-grouse EPM would focus primarily on early stage expansion woodlands, and is not a comprehensive piñon-juniper management plan. Trees cut in association with the proposed Project would be available not only for personal harvest but also for commercial use under a commercial deadwood permit. Untreated piñon-juniper areas within and surrounding the Project Area would remain open to commercial Christmas Tree and pine nut collection. Due to these reasons, the EPM's effects on forestry resources would be very limited; therefore, forestry and woodland resources is not carried forward for additional analysis.

3.2.5 **Geology and Minerals**

3.2.5.1 Affected Environment

The Project Area is located in north-central Nevada, within the Cortez Segment of the Battle Mountain-Eureka mineral trend. The Cortez Segment hosts three large Carlin-type gold deposits (CTGD): the Pipeline; the Cortez Hill; and the Goldrush deposits, along with several smaller deposits. These deposits are within the Devonian and Silurian carbonate-rich rocks below the Roberts Mountain Thrust (Figure 3.2.5). This thrust repositioned older upper plate siliclastic rocks of the Western Assemblage over younger lower plate carbonate-rich rocks of the Eastern Assemblage, which are the principal hosts for gold mineralization in the Cortez Segment. Erosion through the upper plate has exposed the favorable lower plate rocks in a series of "windows" through the thrust along the Cortez Segment.

The Project Area lies in one of these "windows" through the thrust. Younger volcanic rocks cover the western portion of the "window" and in part, also contain gold mineralization. Historic and recent drilling activities have identified gold in the Tertiary volcanics and Devonian Horse Canyon and Wenban formations that have a similar geologic setting to that of the other CTGD in the Cortez Segment. Mineralization is associated with silicification, argillization, and decalcification of the carbonate-rich rocks. Wide-space drilling has identified mineralization along a north-northwest trending corridor that is approximately two miles long and 1,000 feet wide.



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Explanation

- Project Area
- Qya - Younger alluvium
- QToa - Older alluvium and alluvial fan deposits (Pleistocene and Pliocene)
- QTs - Tuffaceous limestone, siltstone, sandstone, and conglomerate (Holocene to Pliocene)
- Tba - Andesite and basalt flows (Miocene and Oligocene)
- Dc - Limestone and minor dolomite (Upper and Middle Devonian)
- Dcd - Dolomite, sandstone, and limestone (Middle and Lower Devonian)
- DCs - Shale, chert, quartzite, greenstone, and limestone (Devonian to Upper Cambrian)
- Known fault
- Inferred fault
- Known thrust fault

BATTLE MOUNTAIN DISTRICT OFFICE
 Mount Lewis Field Office
 50 Bastian Road
 Battle Mountain, Nevada 89820



BUREAU OF LAND MANAGEMENT

CMZ EXPLORATION PROJECT

Geologic Map of the Project Area

Figure 3.2.5

0 1,000 2,000 Feet N

Source: Crafford, 2007, USGS Data Series 249

10/30/2014

3.2.5.2 Environmental Consequences

The Proposed Action would not involve the removal of large volumes of earth that could potentially lead to structural instability. Only a small amount of material would be removed from drill holes and bulk sample excavations and would not affect potential mineral resources in the ground. Compared to the overall ore deposition, the amount of minerals extracted as a result of these exploration activities is in effect miniscule and would not have any appreciable impact on geology and minerals.

3.2.6 **Migratory Birds**

3.2.6.1 Affected Environment

"Migratory bird" means any bird listed in 50 CFR 10.13. All native birds found commonly in the US, with the exception of native resident game birds that do not migrate, are protected under the Migratory Bird Treaty Act of 1918 (MBTA). The MBTA prohibits the 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 into projects.

Additional direction comes from a Memorandum of Understanding (MOU) between the BLM and US Fish and Wildlife Service (USFWS), signed January 17, 2010. The purpose of this MOU is to strengthen migratory bird conservation through enhanced collaboration between the BLM and USFWS, in coordination with state, tribal, and local governments. The MOU identifies management practices that impact populations of high priority migratory bird species, including nesting, migration, or over-wintering habitats, on public lands, and develops management objectives or recommendations that avoid or minimize these impacts.

Enviroscientists conducted baseline surveys for wildlife species, including migratory birds and raptors, in May and June 2013 for the Project Area (Enviroscientists 2013). Table 3.2-1 lists all migratory bird species observed within the Project Area during the surveys.

Table 3.2-1: Migratory Bird Species Detected in the Project Area

Common Name	Scientific Name
American kestrel	<i>Falco sparverius</i>
Ash-throated flycatcher	<i>Myiarchus cinerascens</i>
Black-throated sparrow	<i>Amphispiza bilineata</i>
Blue-gray gnatcatcher	<i>Poliopitila caerulea</i>
Brewer's sparrow	<i>Spizella breweri</i>
Chipping sparrow	<i>Spizella passerina</i>
Common raven	<i>Corvus corax</i>
Ferruginous hawk	<i>Buteo regalis</i>
Greater sage grouse	<i>Centrocercus urophasianus</i>
Horned lark	<i>Eremophila alpestris</i>

Common Name	Scientific Name
Lark sparrow	<i>Chondestes grammacus</i>
Long-eared owl	<i>Asio otus</i>
Mountain bluebird	<i>Sialia currucoides</i>
Northern flicker	<i>Colaptes auratus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Sage sparrow	<i>Amphispiza belli</i>
Spotted towhee	<i>Pipilo maculatus</i>
Western meadowlark	<i>Sturnella neglecta</i>

In addition, the Nevada Department of Wildlife (NDOW), Nevada Natural Heritage Program (NNHP), and the USFWS were contacted to request information regarding wildlife use and nesting raptors in the area. In a response letter provided on April 5, 2013, for the proposed Project, the NDOW identified the following additional migratory birds as being known to reside in the vicinity (four-mile buffer) of the Project Area: barn owl (*Tyto alba*); burrowing owl (*Athene cunicularia*); Cooper’s hawk (*Accipiter cooperii*); golden eagle (*Aquila chrysaetos*); great horned owl (*Bubo virginianus*); merlin (*Falco columbarius*); northern goshawk (*Accipiter gentilis*); northern harrier (*Circus cyaneus*); northern saw-whet owl (*Aegolius acadicus*); osprey (*Pandion haliaetus*); peregrine falcon (*Falco peregrinus*); prairie falcon (*Falco mexicanus*); rough-legged hawk (*Buteo lagopus*); sharp-shinned hawk (*Accipiter striatus*); short-eared owl (*Asio flammeus*); Swainson’s hawk (*Buteo swainsoni*); turkey vulture (*Cathartes aura*); and western screech-owl (*Megascops kennicottii*) (NDOW 2013). The NDOW stated that an osprey has been directly observed in the vicinity of the Project Area. The NDOW has identified the burrowing owl, short-eared owl, and Swainson’s hawk as NDOW species of special concern and are target species for conservation. No non-special status raptor nest sites have been identified by the NDOW in the vicinity of the Project Area. The NDOW also stated that no bald or golden eagle nests are known to occur within ten miles of the Project Area.

Migratory bird species that have additional protection or management attention are discussed in detail in Section 3.2.12, “Special Status Species.” These species include the following: Brewer’s sparrow; ferruginous hawk; and greater sage-grouse.

3.2.6.2 Environmental Consequences

The Proposed Action would create surface disturbance and associated removal of vegetation, which could potentially result in the destruction of active nests or disturb the breeding behavior of migratory bird species. Vegetation removal and ground disturbance would result in a temporary reduction of 100 acres of foraging and breeding habitat for migratory birds and foraging habitat for raptors within the Project Area. This acreage would not be disturbed all at one time due to the phased nature of the exploration activities associated with the Proposed Action. All surface disturbance associated with Project-related activities would be reclaimed, and post-exploration land use is expected to return disturbed land to a level of productivity comparable to pre-exploration levels. As outlined in the EPM in Section 2.1.9, NUG has committed to providing a qualified biologist to conduct nest surveys prior to any surface disturbing activities associated with exploration activities during the avian breeding season. This

measure would ensure that no direct impacts to migratory birds are likely to occur under the Proposed Action. Indirect impacts, as a result of the Project, and vegetation removal could lead to temporary spatial redistribution of individuals or habitat-use patterns during the life of the Project. It is unlikely that implementing the Proposed Action would result in a decline in local or regional migratory bird populations because birds would be able to redistribute and undisturbed and suitable habitat exists outside of the Project Area.

The proposed greater sage-grouse EPM would result in short-term, temporary disturbance to wildlife during the implementation phase. To minimize impacts to migratory birds, site surveys would be conducted (from March 1st through July 31st) by a qualified biologist to determine the presence of nesting birds. Crew members would be trained to identify nesting bird behavior and instructed to inspect trees for nests before cutting. (To date this has been the most effective strategy for avoiding impacts to tree nesting birds.)

3.2.7 Native American Religious Concerns

3.2.7.1 Affected Environment

Located within the traditional territory of the Western Shoshone, the MLFO administrative boundary contains spiritual, traditional, and cultural resources, and sites to engage in social practices that aid in maintaining and strengthening the social, cultural, and spiritual integrity of the Tribes. The BLM conducted Native American consultation on May 15, 2014, by contacting the Te-Moak Tribe of the Western Shoshone (Battle Mountain Band Council, the Elko Band Council, and the South Fork Band Council) and the Duckwater Shoshone Tribe. A site visit was conducted on June 11, 2014, with members of the Elko Band Council. No concerns were identified during the visit.

Social activities of Native Americans continue to define places of cultural importance across lands currently administered by the BLM. Some Western Shoshone maintain 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 animal 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 (mano and matate);
- Chert and obsidian quarries;
- Hunting sites;

- Sweat lodge locations;
- Locations of pine nut ceremonies, traditional gathering, and camping;
- Rock collecting for use in offerings and medicine gathering;
- Tribally identified Traditional Cultural Properties (TCPs);
- TCPs found eligible to the NRHP;
- 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 National Historic Preservation Act of 1966 (P.L. 89-665), the NEPA, the FLPMA (P.L. 94-579), the American Indian Religious Freedom Act of 1978 (P.L. 95-341), the 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.

3.2.7.2 Environmental Consequences

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. TCPs, designated by the Tribes, are not known to exist in or within the vicinity of the Project Area. The BLM continues to solicit input from local tribal entities. The BLM is continuing to coordinate with the Tribes to identify any other sites or 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” would be determined through coordination and communication between all participating entities.

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

If a subsequent development plan or amendment to the Plan is submitted to the BLM as a result of an approval of this specific mineral exploration proposal, the BLM would again initiate consultation with the local Tribes and utilize any data collected during this mineral 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. The EPM in Section 2.1.9 states that all

activities would be halted immediately in the event of a discovery of a cultural resource. Cultural and archaeological resources are protected under the Archaeological Resources Protection Act (16 United States Code 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 NAGPRA, Section (3)(d)(1), the discovering individual must notify the authorized officer 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.

At this time, no impacts related to Native American Religious Concerns have been identified and are not anticipated from the Proposed Action. Tribal relations and coordination does not terminate with the land use decision itself, but rather continues to engage Tribes regarding treatments, mitigation, reclamation, and disposition of artifacts and deports.

3.2.8 Noxious Weeds, Invasive, and Non-native Species

3.2.8.1 Affected Environment

Noxious weeds, invasive and non-native species are species that are highly competitive, highly aggressive, and spread easily. Noxious weeds and invasive plant species have been defined as pests by law or regulation. 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 BLM Battle Mountain District recognizes the current noxious weed list designated by the State of Nevada Department of Agriculture (NDOA) statute, found in NAC 555.010. An "invasive species" is defined as a species that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health (EO 13112, signed February 3, 1999).

The BLM’s policy relating to the management and coordination of noxious weed and invasive plant species is set forth in the BLM Manual 9015 – Integrated Weed Management (BLM 1992b). The BLM’s primary focus is “providing adequate capability to detect and treat smaller weed infestations in high-risk areas before they have a chance to spread.” Noxious weed control would be based on a program of “...prevention, early detection, and rapid response” (BLM 2013a).

According to the 2013 field surveys and the baseline report prepared for the Project (Enviroscientists 2013), a single noxious weed population detected within the Project Area was hoary cress or white top (*Cardaria draba*) (Table 3.2-2). This population of approximately 50 hoary cress individuals was observed along a road within the Project Area. The following invasive and non-native plant species observed within the Project Area include: pale madwort (*Alyssum alyssoides*); desert madwort (*Alyssum desertorum*); curvseed butterwort (*Ceratocephala testiculata*); crossflower (*Chorispora tenella*); saltlover (*Halogeton glomeratus*); prickly lettuce (*Lactuca serriola*); prickly Russian thistle (*Salsola tragus*); tall tumbled mustard (*Sisymbrium altissimum*); field pennycress (*Thlaspi arvense*); yellow salsify (*Tragopogon dubius*); and cheatgrass (*Bromus tectorum*). These species were primarily observed in previously

disturbed areas intermixed with native species, and no monocultures of these species were noted in the Project Area (Enviroscientists 2013).

Table 3.2-2: Noxious Weeds Observed in the Project Area

Noxious Weed	NDOA Category	NDOA Category Description	Date Observed in the Project Area
Hoary cress (white top)	C	Weeds that are generally established and generally widespread in many counties of the State.	June 2013

Source: NDOA 2014

3.2.8.2 Environmental Consequences

New surface disturbance of approximately 100 acres within the Project Area, as a result of the implementation of the Proposed Action, could increase the potential for the spread and establishment of noxious weeds, invasive and non-native species. These impacts would be mitigated based on implementation of the EPMs outlined in Section 2.1.9. In addition, should a new population of noxious weeds be detected, NUG would coordinate with the BLM on methods for weed management.

Implementation of the greater sage-grouse EPM would not contribute to the creation of conditions favorable for the spread and establishment of noxious weeds, invasive and non-native species since the activity does not result in ground disturbance and all hand crews would be required to practice BMPs.

3.2.9 **Rangeland Management/Livestock Grazing**

3.2.9.1 Affected Environment

The Project Area is located within the JD Grazing Allotment. The allotment contains 97,740 acres and the permitted animal unit months (AUMs) are 7,799. The number of acres per AUM is 13. The Project Area contains 1,760 acres or 1.8 percent of the allotment. The current permittee for the JD Allotment is Barrick Cortez, Inc. The current authorization for cattle grazing is from March 1, 2013, through February 28, 2023.

3.2.9.2 Environmental Consequences

The Project would disturb 100 acres within 1.8 percent of the entire allotment. This disturbance would equal approximately eight AUMs or approximately 0.1 percent of the total AUMs in the allotment. The impacts associated with this Project are temporary. Disturbance would be created incrementally and dispersed throughout the Project Area and would be reclaimed and revegetated concurrently, when feasible.

As part of the Proposed Action, implementation of the greater sage-grouse EPM would result in piñon-juniper treated sites retaining understories that are largely intact. Dramatic changes in understory plant composition or productivity are not anticipated and have not been observed on

similar treated sites in the past. Moreover, since ground disturbance by foot crews with chainsaws is minimal, and since little change in post-treatment livestock use is anticipated, significant increases in weedy annuals are not expected. Grazing management following juniper control should be adaptive to changing environmental and resource conditions (Bates 2005). Past experience with similar piñon-juniper treatments suggests that marked increase in livestock use of the treated area or distribution of livestock would not occur. Any marginal increase in use of the treatment site by livestock following piñon-juniper removal would likely be offset by the effect of the toppled trees in creating micro safe sites for understory plants. Consequently, the need for post-treatment closure of treatment sites to livestock is not anticipated.

3.2.10 Recreation

3.2.10.1 Affected Environment

Recreational uses of the public land in the vicinity of the Project Area consist primarily of dispersed recreation activities including the following: motorcycle and off-highway vehicle (OHV) riding; horseback riding; mountain bicycling; camping; driving for pleasure; hiking; hunting; rockhounding; photography; rock climbing; nature study; wildlife/wild horse/burro viewing; picnicking; cross country skiing; and snowmobiling. The Project Area is located within NDOW Hunt Unit 155. Hunting of mule deer and pronghorn antelope occurs in this hunt unit, as well as small mammals and upland and migratory game birds.

3.2.10.2 Environmental Consequences

The Proposed Action would result in up to 100 acres of temporary surface disturbance, which would reduce opportunities for dispersed recreation within the Project Area. However, no impacts are anticipated as a result of the Proposed Action, since there is other similar land available to dispersed recreational visitors in the vicinity of the Project Area. In addition, all roads would remain open during Project activities, and there would be no fencing to preclude use, except for fences around sumps to protect wildlife and humans. Therefore, no further analysis is required for this element in this EA.

The implementation of the greater sage-grouse EPM as part of the Proposed Action, with its associated chain saw noise, could have immediate negative effects upon recreational opportunities in the proposed Project Area during implementation by detracting from the naturalness of the experience. Following treatment and in the long term, however, recreational opportunities such as hiking, horseback riding, wildlife viewing, and hunting would be enhanced by the preservation of plant, wildlife, and aesthetic diversity.

3.2.11 Social Values and Economics

3.2.11.1 Affected Environment

The Project Area is located in Eureka County approximately 58 miles northwest of Eureka, Nevada. Eureka County is located in northeastern Nevada and encompasses approximately 4,182 square miles. Eureka County is the analysis area for Social Values and Economics. The federal government administers over 79 percent of the land in Eureka County. Interstate 80

traverses Eureka County in an east-west direction on the northern end, as does US Highway 50 on the southern end.

The total population of Eureka County in 2013 was estimated to be 2,024 (NSDO 2013). Mining was identified as a major employment sector (DETR 2014).

3.2.11.2 Environmental Consequences

A temporary workforce of up to eight employees or contractors could work in the Project Area at any given time. Such personnel would be temporary and should not create a demand for additional public or private services and would not impact public schools, the permanent housing market, or other services associated with permanent workers.

Implementing the greater sage-grouse EPM would provide seasonal work for a relatively small crew for up to ten years and would not affect population growth in the area, nor would it create or provide any infrastructure, which would indirectly induce substantial population growth. The crews would help to support local economies through the purchase of fuel, groceries, tools and equipment. This spending activity associated with the proposed Project would have a small but positive effect on local businesses in Eureka County but would not measurably contribute to the economic benefits described from the exploration activities.

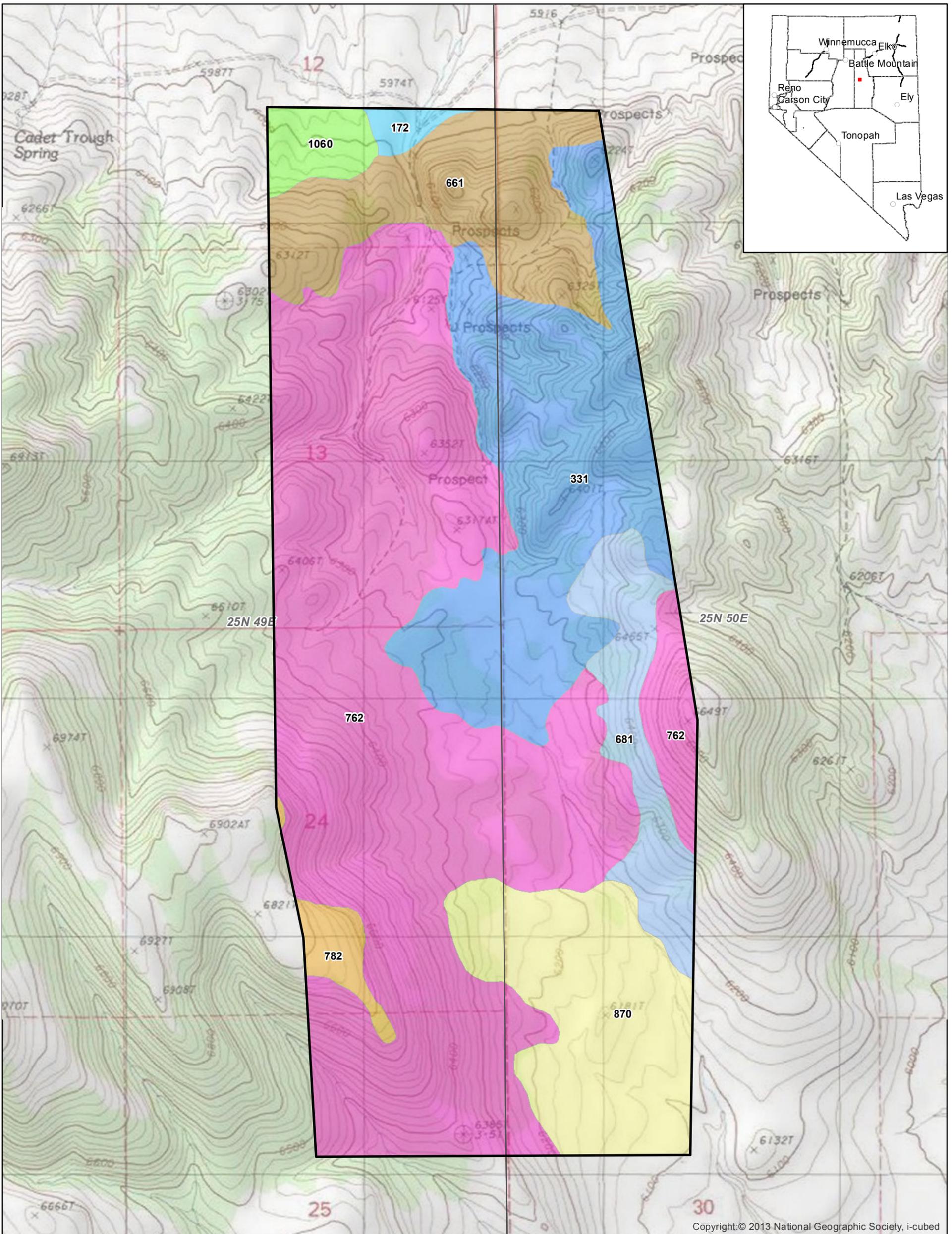
3.2.12 Soils

3.2.12.1 Affected Environment

Information regarding soils within the Project Area was obtained from the US Department of Agriculture Natural Resources Conservation Service (NRCS). The soil associations within the Project Area consist of the following: Shagnasty-Softscrabble association (762); Hopeka-Solak-Rock outcrop association (331); Fortank very stony loam, four to eight percent slopes (870); Akerue-Simpark-Robson association (661); Chad-Cleavage-Softscrabble association (681); Allker gravelly sandy loam, two to eight percent slopes (1060); Walti-Softscrabble-Robson association (782); and Nuc-Maghills complex, two to eight percent slopes (172). Soil associations within the Project Area are shown on Figure 3.2.12 and listed in Table 3.2-3.

The Shagnasty-Softscrabble association is comprised of 60 percent Shagnasty extremely stony loam and 25 percent Softscrabble very stony fine sandy loam. This association occurs in approximately 878 acres of the Project Area. The Shagnasty series consists of deep, well-drained soils that formed in residuum and colluvium derived from rhyolite, andesite, and quartzite. The Softscrabble series consists of very deep, well-drained soils that formed in residuum and colluviums derived from volcanic rock (NRCS 1989).

The Hopeka-Solak-Rock outcrop association is comprised of 40 percent Hopeka very gravelly loam, 35 percent Solak very gravelly loam, and ten percent rock outcrop. This association occurs in approximately 337 acres of the Project Area. The Hopeka series consists of very shallow, well-drained soils that formed in residuum derived from dolomite and limestone. The Solak series consists of shallow, somewhat excessively drained soils that formed in residuum derived from tuff, chert, and siliceous shale (NRCS 1989).



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Explanation

- Project Area
- 1060 Allker gravelly sandy loam, 2 to 8 percent slopes
- 172 Nuc-Maghills complex, 2 to 8 percent slopes
- 331 Hopeka-Solak-Rock outcrop association
- 661 Akerue-Simpark-Robson association
- 681 Chad-Cleavage-Softscrabble association
- 762 Shagnasty-Softscrabble association
- 782 Walti-Softscrabble-Robson association
- 870 Fortank very stony loam, 4 to 8 percent slopes

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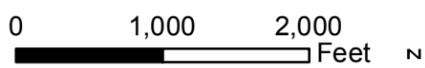
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Soil Associations within the Project Area

Figure 3.2.12



10/30/2014

Fortank very stony loam, four to eight percent slopes, occurs in approximately 203 acres of the Project Area. The Fortank series consists of moderately deep, well-drained soils that formed in residuum derived from andesite, rhyolite, tuff, and quartzite (NRCS 1989).

The Akerue-Simpark-Robson association is comprised of 40 percent Akerue very stony loam, 35 percent Simpark very stony loam, and ten percent Robson very stony loam. This association occurs in approximately 175 acres of the Project Area. The Akerue series consists of well-drained soils that formed in residuum derived from andesite, rhyolite, and quartzite. The Simpark series consists of shallow, well-drained soils that formed in residuum derived from rhyolite. The Robson series consists of shallow, well-drained soils that formed in residuum derived from rhyolite, andesite, and tuff (NRCS 1989).

Table 3.2-3: Summary of Soil Mapping Units and Characteristics

Association	Soil Series	Range in Depth to Restrictive Surface	Landscape position/ % Slope	Profile Soil Texture	Permeability	Erosion Hazard by Water	Erosion Hazard by Wind
Shagnasty-Softscrabble (762)	Shagnasty	50 to 59 inches (paralithic bedrock)	Side slopes of mountains; 15 to 50%	Extremely stony loam	Slow	Moderate	Slight
	Softscrabble	More than 80 inches	Lower side slopes of mountains; 15 to 30%	Very stony fine sandy loam	Slow	Slight	Slight
Hopeka-Solak-Rock outcrop (331)	Hopeka	4 to 10 inches (lithic bedrock)	South-, east-, and west-facing side slopes of mountains 8 to 15%	Very gravelly loam	Moderate	Slight	Slight
	Solak	10 to 20 inches (lithic bedrock)	Crests and upper side slopes of mountains 8 to 30%	Very gravelly loam	Moderate	Slight	Slight
	Rock Outcrop	--	Crests of mountains 10%	--	--	--	--
Fortank very stony loam, 4 to 8 percent slopes (870)	Fortank	30 to 39 inches (paralithic bedrock)	Side slopes of hills 4 to 8%	Very stony loam	Slow	Slight	Slight

Association	Soil Series	Range in Depth to Restrictive Surface	Landscape position/ % Slope	Profile Soil Texture	Permeability	Erosion Hazard by Water	Erosion Hazard by Wind
Akerue-Simpark-Robson (661)	Akerue	14 to 20 inches (duripan)	South- and west-facing crests and side slopes of mountains 15 to 30%	Very stony loam	Slow	Slight	Slight
	Simpark	14 to 20 inches (duripan)	Side slopes of mountains 15 to 50%	Very stony loam	Moderate	Moderate	Slight
	Robson	12 to 20 inches (lithic bedrock)	Lower side slopes of mountains	Very stony loam	Slow	Moderate	Low
Chad-Cleavage-Softscrabble (681)	Chad	39 to 59 inches (paralithic bedrock)	Side slopes of mountains 15 to 30%	Cobbly loam	Slow	Moderate	Slight
	Cleavage	14 to 20 inches (lithic bedrock)	Crests and upper side slopes of mountains 5 to 15%	Gravelly loam	Moderately slow	Slight	Slight
	Softscrabble	More than 80 inches	Side slopes of mountains 8 to 15%	Stony fine sandy loam	Slow	Moderate	Slight
Allker gravelly sandy loam, 2 to 8 percent slopes (1060)	Allker	More than 80 inches	Summits of fan piedmonts 2 to 8%	Gravelly sandy loam	Moderately slow in the upper 37 inches, rapid from 38 inches downward	Slight	Slight
Walti-Softscrabble-Robson (782)	Walti	20 to 30 inches (lithic bedrock)	Middle and upper side slopes 15 to 30%	Extremely stony loam	Very slow	Slight	Slight
	Softscrabble	More than 80 inches	North-facing side slopes of mountains 15 to 30%	Very stony fine sandy loam	Slow	Slight	Slight

Association	Soil Series	Range in Depth to Restrictive Surface	Landscape position/ % Slope	Profile Soil Texture	Permeability	Erosion Hazard by Water	Erosion Hazard by Wind
	Robson	12 to 20 inches (lithic bedrock)	Lower side slopes of mountains 8 to 15%	Very stony loam	Slow	Slight	Slight
Nuc-Maghills complex, 2 to 8 percent slopes (172)	Nuc	More than 80 inches	Middle to lower parts of alluvial fans and fan skirts 4 to 8%	Gravelly loam	Slow in the upper 44 inches, rapid from 45 inches downward	Slight	Slight
	Maghills	More than 80 inches	Upper part of alluvial fans and fan skirts 2 to 8%	Gravelly sandy loam	Moderate in the upper 17 inches, rapid from 18 inches downward	Slight	Slight

Source: NRCS 1989

The Chad-Cleavage-Softscrabble association is comprised of 45 percent Chad cobbly loam, 20 percent Cleavage gravelly loam, and 20 percent Softscrabble stony fine sandy loam. This association occurs in approximately 97 acres of the Project Area. The Chad series of deep, well-drained soils that formed in residuum derived from chert and shale with small components of loess and volcanic ash. The Cleavage series consists of shallow, well-drained soils that formed in residuum derived from chert and shale. The Softscrabble series consists of very deep, well-drained soils that formed in residuum and colluviums derived from volcanic rock (NRCS 1989).

Allker gravelly stony loam, four to eight percent slopes, occurs in approximately 34 acres of the Project Area. The Allker series consists of very deep, well-drained soils that formed in alluvium derived from mixed volcanic and sedimentary rocks with some influence of loess (NRCS 1989).

The Walti-Softscrabble-Robson association is comprised of 50 percent Walti extremely stony loam, 20 percent Softscrabble very stony fine sandy loam, and 15 percent Robson very stony loam. This association occurs in approximately 25 acres of the Project Area. The Walti series consists of moderately deep, well-drained soils that formed in colluviums and residuum derived from rhyolite, andesite, and quartzite. The Softscrabble series consists of very deep, well-drained soils that formed in residuum and colluviums derived from volcanic rock. The Robson series consists of shallow, well-drained soils that formed in residuum derived from rhyolite, andesite, and tuff (NRCS 1989).

The Nuc-Maghills complex, two to eight percent slopes, is comprised of 70 percent Nuc gravelly loam and 20 percent Maghills gravelly sandy loam. This association occurs in approximately 12 acres of the Project Area. The Nuc series consists of very deep, somewhat excessively drained soils that formed in alluvium derived from limestone. The Maghills series consists of very deep,

well-drained soils that formed in alluvium weathered from limestone with some influence of volcanic ash (NRCS 1989).

Wind erosion hazard is low to slight for all soil classifications. Erosion hazard from water ranges from slight to moderate.

3.2.12.2 Environmental Consequences

The total surface disturbance associated with implementation of the Proposed Action would impact up to 100 acres, or approximately 5.7 percent of the Project Area, and could occur in any of the soil series within the Project Area (Table 3.2-3). The potential surface disturbance to each soil series as a result of the implementation of the Proposed Action is shown in Table 3.2-4.

Table 3.2-4: Potential Surface Disturbance to each Soil Series in the Project Area

Soil Series	Acres in the Project Area	Potential Surface Disturbance	
		Acres	Percent
Shagnasty-Softscrabble (762)	878	0 to 100	0 to 11
Hopeka-Solak-Rock outcrop (331)	337	0 to 100	0 to 30
Fortank very stony loam, 4 to 8 percent slopes (870)	204	0 to 100	0 to 49
Akerue-Simpark-Robson (661)	175	0 to 100	0 to 57
Chad-Cleavage-Softscrabble (681)	97	0 to 97	0 to 100
Allker gravelly sandy loam, 2 to 8 percent slopes (1060)	34	0 to 34	0 to 100
Walti-Softscrabble-Robson (782)	25	0 to 25	0 to 100
Nuc-Maghills complex, 2 to 8 percent slopes (172)	12	0 to 12	0 to 100

Potential impacts to soils would be reduced by the EPM outlined in Section 2.1.9 requiring the use of BMPs to limit soil erosion and to reduce sediment runoff from disturbed areas during construction and operations. Topsoil cut for new exploration roads would result in the mixing of soil associations and the loss of soil characteristics. Soils would be cut and used as temporary construction fill as part of the road and drill pad construction. Subsequent reclamation efforts would place the soils back in the temporary cuts. Furthermore, as a result of reclamation of all drill sites, sumps, overland travel and road construction, the post-exploration topography is expected to be similar to pre-Project conditions, which would reestablish the site characteristics of slope and aspect of soil associations within the Project Area.

Tree encroachment into sagebrush-steppe promotes water and soil loss by increasing bare ground connectivity, and amplifying runoff. Initial tree encroachment minimally impacts runoff and erosion, but continued encroachment may cause a shift from a resource-conserving to a non-conserving state. Sites on soils with inherently low infiltration and high erodibility may rapidly transform to a non-conserving state (particularly under drought conditions) as tree dominance promotes bare soil between trees as well as connectivity between bare areas. Runoff and erosion increase exponentially where bare soil exceeds 50 percent (Pierson et al. 2010). By implementing the greater sage-grouse EPM as part of the Proposed Action, tree removal aimed at maintaining and improving shrub and herbaceous cover and structure, can also increase infiltration and aggregate stability (Pierson et al. 2012).

3.2.13 Special Status Species

3.2.13.1 Affected Environment

The BLM's policy for management of special status species is in the BLM Manual Section 6840 (BLM 2008b). Special status species include the following:

- Federally Threatened or Endangered Species: Any species the 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 the USFWS has proposed for listing as a federally endangered or threatened species under the ESA;
- Candidate Species: Plant and animal taxa under consideration for possible listing as threatened or endangered under the ESA;
- Delisted Species: Any species in the five years following their delisting;
- BLM Sensitive Species: Native species found on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management, and either: 1) there is information that a species has undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range; or 2) the species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk (BLM 2008b); and
- State of Nevada Listed Species: State-protected animals that have been determined to meet BLM's Manual 6840 policy definition.

To further support the preparation of this EA, the USFWS, the 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 (USFWS 2013; NNHP 2013; and NDOW 2013). In addition, the most recent BLM Sensitive Species List, which includes threatened and endangered species, was evaluated to determine if any species had the potential to occur within the Project Area (Enviroscientists 2013). Information from the NNHP indicates that no federally threatened or endangered plant or animal species have the potential to occur within the Project Area (NNHP 2013). The USFWS indicated that Lahontan cutthroat trout (*Oncorhynchus clarkia* ssp. *henshawi*) (LCT) may be impacted by Project activities (USFWS 2013). There are no perennial drainages in the Project Area; therefore, there is no suitable habitat for LCT within the Project Area.

Botanical surveys were conducted for the Project Area June 18 through 21, 2013, by Enviroscientists. Wildlife field surveys were conducted by qualified Enviroscientists biologists in the survey area May 2, May 4, and June 16, 2013. The surveys included the following: a vegetation community assessment and species inventory; verification of ecological sites;

sensitive plant and wildlife surveys; a general wildlife habitat assessment and species inventory; a greater sage-grouse survey and habitat assessment; a pygmy rabbit (*Brachylagus idahoensis*) survey and habitat assessment; and a migratory bird and raptor survey. An aerial raptor survey was conducted by helicopter on May 4, 2013, to locate potentially active raptor nests (Enviroscientists 2013).

BLM Sensitive Species

BLM sensitive species are taxa that are not already included as BLM special status species under the following: 1) federally listed, proposed, or candidate species; or 2) State of Nevada listed species. BLM policy is to provide these species with the same level of protection as is provided to candidate species as described in BLM Manual 6840.06.2C.

In addition to federally listed species (i.e., protected by the ESA) discussed above, the BLM also protects special status species by policy (BLM 2008b). The list includes certain species designated by the State of Nevada, as well as species designated as “sensitive” by the Nevada BLM State Director. Various BLM-sensitive raptor, bird, and plant species identified within the Project Area during field surveys are discussed below.

BLM Sensitive Plant Species

The NNHP identified that no known special status plant species populations occur within the vicinity of the Project Area (NNHP 2013). The June 2013 botanical surveys found no special status plant species or populations within the Project Area (Enviroscientists 2013).

BLM Sensitive Wildlife Species

The NNHP identified potential habitat in the Project Area may be available for pygmy rabbit (NNHP 2013). The USFWS identified that greater sage-grouse, a candidate and BLM sensitive species, may be impacted by Project activities (USFWS 2013). The NDOW identified seven known greater sage-grouse lek sites and eight ferruginous hawk nests in the Project Area vicinity (NDOW 2013). Brewer’s sparrow was also detected during the June 2013 field surveys (Enviroscientists 2013). A desktop analysis revealed a lack of bat roosting and hibernacula habitat, i.e., mine tunnels, adits/shafts, buildings, abandoned structures, or natural caves in the Project Area. June 2013 field surveys confirmed the lack of bat roosting and hibernacula habitat.

Greater Sage-Grouse

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. Greater sage-grouse are found in 11 western states and two Canadian provinces. In Nevada, the greater sage-grouse habitat includes sagebrush, montane shrubland, and wet meadow. The greatest threats to the greater sage-grouse in Nevada are loss of habitat due to fire and piñon-juniper encroachment and a decline in habitat quality due to invasive plants and inadequate grazing management systems, which can particularly impact brood-rearing meadows (GBBO 2010). In 2010, the population in Nevada was estimated to be between 68,000 and 88,000, which represented approximately 50 percent of the global population (GBBO 2010). Greater sage-grouse have specific habitat requirements to carry out their life cycle functions. Greater

sage-grouse breeding habitats are defined as those where lek attendance, nesting, and early brood-rearing occur (Connelly et al. 2004).

The BLM has issued two IMs for the management of greater sage-grouse habitat, IM 2012-043, “Greater Sage-Grouse Interim Management Policies and Procedures” and IM 2012-044, “BLM National Greater Sage-Grouse Land Use Planning Strategy” (BLM 2011a and 2011b). These IMs provide the BLM with interim policies, procedures, and conservation measures to be applied to ongoing and proposed authorizations that affect greater sage-grouse. The IMs incorporate the following principles:

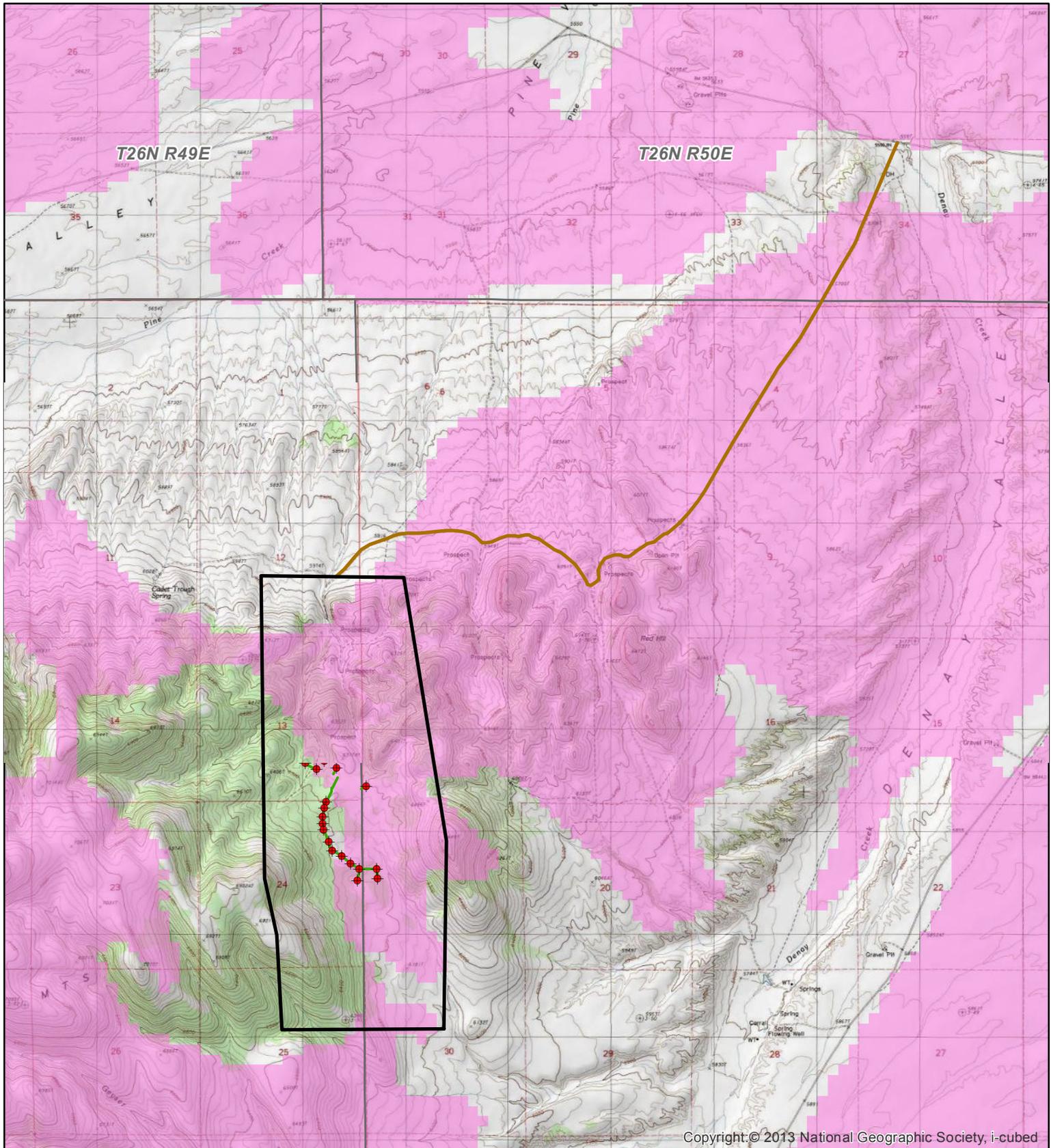
- Protection of unfragmented habitats;
- Minimization of habitat loss and fragmentation; and
- Management of habitats to maintain, enhance, or restore conditions that meet greater sage-grouse life history needs.

To provide guidance to field offices about how to promote these principles, IM 2012-043 transmits policies and procedures that apply to ongoing and proposed BLM actions (such as salable minerals) within PPH and Preliminary General Habitat (PGH). PPH comprises areas that have been identified as having the highest conservation value, and PGH comprises areas of occupied seasonal or year-round habitat outside of priority habitat. In Nevada, these areas have been identified and mapped based on NDOW’s preliminary habitat characterization map, which is intended to be used on a landscape not Project-specific scale. There are approximately 1,054 acres of PPH identified in the Project Area, and no PGH (Figure 3.2.13a).

For locatable minerals (described in IM 2012-043), the BLM is instructed that new plans of operation include measures to avoid or minimize adverse effects to greater sage-grouse populations and their habitat.

The NDOW indicated that the greater sage-grouse habitat in the vicinity of the Project Area is primarily categorized as essential/irreplaceable habitat. The NDOW identified seven known lek sites within four miles of the Project Area: Buckhorn Road (approximately 3.5 miles from the Project Area); Buckhorn Road 2 (approximately 3.6 miles from the Project Area); Red Hills 1 (approximately two miles from the Project Area); Red Hills 2 (approximately one mile from the Project Area); Red Hills 3 (approximately 1.3 miles from the Project Area); Red Hills 4 (approximately 1.5 miles from the Project Area); and Tonkin Road (approximately 3.4 miles from the Project Area). The Buckhorn Road lek was the only lek identified as active, while the other six leks have an unknown status.

The NDOW performed aerial surveys for the Red Hills 1, Red Hills 2, Red Hills 3, Red Hills 4, and Tonkin Road lek sites in April 2013. No greater sage-grouse were observed during those surveys (Podburny 2013). Enviroscientists performed ground surveys in May 2013 for all seven lek sites. During these surveys, four male greater sage-grouse were observed on the Tonkin Road lek, and were found displaying, strutting, and calling during the surveys. Females or unknown greater sage-grouse were not observed during the surveys. No greater sage-grouse were observed on or within the vicinity of the other six lek sites. At the Red Hills 1 lek, old greater sage-grouse sign was observed in the form of ten piles of tan scat and 15 piles of gray cracked scat. No other greater sage-grouse signs were detected on the other five lek sites or in the vicinity of the lek sites (Enviroscientists 2013).



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Explanation

- Project Area
- Proposed Drill Site
- Proposed Constructed Road
- Proposed Overland Travel
- Project Access Road
- Preliminary Priority Habitat (PPH)

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CMZ EXPLORATION PROJECT
 BLM-Provided Greater Sage-Grouse
 PPH within the Project Area
 and Proposed Phase 1 Disturbance

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Figure 3.2.13a

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Greater sage-grouse scat was found in the Shallow Calcareous Slope 8-10 P.Z. ecological site and the PIMO-JUOS WSG: 0R0501 ecological site in the northern segment of the Project Area. Greater sage-grouse scat was also observed in the eastern portion of the Project Area in the Shallow Calcareous Slope 14+ P.Z. ecological site and the Loamy 8-10 P.Z. ecological site in the southern segment of the Project Area. Low sagebrush is the dominant shrub in the Shallow Calcareous Slope 8-10 P.Z. ecological site with Wyoming big sagebrush in the Loamy 8-10 P.Z. ecological site. Other ridge and hilltops were surveyed within the Project Area, but no additional greater sage-grouse signs were found (Enviroscientists 2013).

Field surveys conducted by Enviroscientists in May and June 2013 show that piñon-juniper and sagebrush vegetation communities dominate the Project Area. The Loamy 8-10 P.Z. and Shallow Calcareous Slope 8-10 P.Z. ecological sites within the Project Area were confirmed to provide winter, brood rearing, and summer habitat for greater sage-grouse (Figure 3.2.13b). Outside of the two ecological sites, there are approximately 833 acres of field-verified piñon-juniper within the 1,760-acre Project Area, or approximately 47 percent.

Under the Proposed Action, the applicant has proposed an EPM to remove piñon-juniper that has encroached into PPH for greater sage-grouse. The implementation of the greater sage-grouse EPM would maintain and enhance habitat for a variety of wildlife species, especially greater sage-grouse, by reducing one of the most important threats to that habitat: encroachment by piñon-juniper trees. While piñon-juniper, especially old-growth stands, have important value as wildlife habitat, these trees, in the absence of periodic fire or other disturbance, often expand their distribution and proliferate at the expense of other plant community species (Tausch et al. 1981; Schaefer et al. 2003; Nallion et al. 1999; Weisberg and Greenwood 2007; Tausch et al. 2009).

Ferruginous hawk

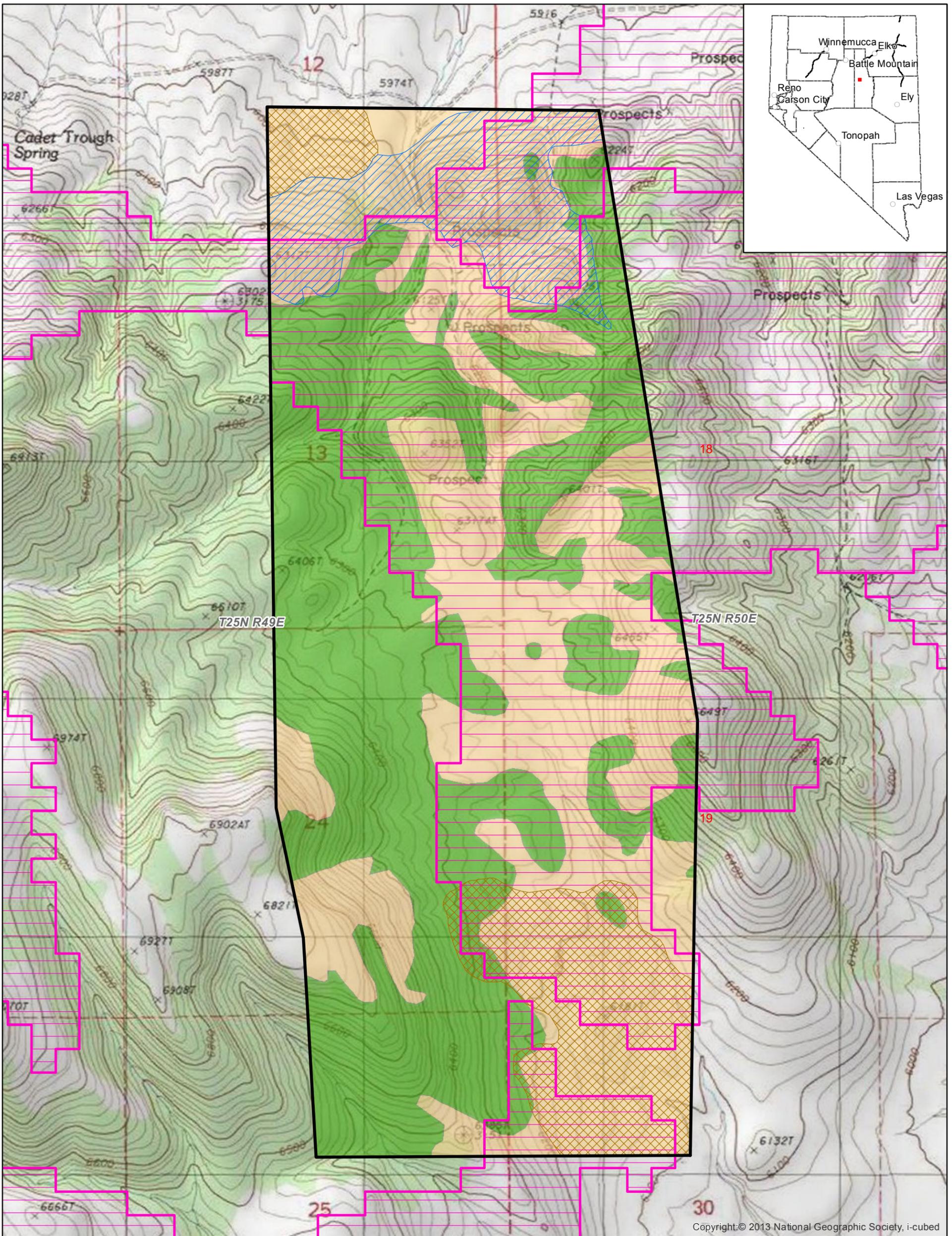
The ferruginous hawk is typically associated with sagebrush and piñon-juniper habitats. This species prefers open habitats with widely spaced juniper or pine trees. Nests consist of stick platforms on isolated trees, ledges, and poles (GBBO 2010). The ferruginous hawk was observed in the Project Area during the 2013 biological survey performed by Enviroscientists. There were no nests observed in the Project Area or within the four-mile buffer area during the May 2013 aerial surveys (Enviroscientists 2013).

Brewer's sparrow

The Brewer's sparrow is typically associated with montane shrubland, sagebrush, and salt desert scrub habitats. This species prefers high shrub density and relatively large habitat patches and mosaics of varying shrub densities. Nesting habitat often consists of dense crown tall shrubs (GBBO 2010). The Brewer's sparrow was observed in the Project Area during the 2013 biological survey performed by Enviroscientists (Enviroscientists 2013).

3.2.13.2 Environmental Consequences

Several BLM sensitive avian species have been observed or are likely to occur in the Project Area. Approximately 100 acres would be disturbed over the potential ten-year Project life as a result of surface disturbing activities associated with implementation of the Proposed Action. Of



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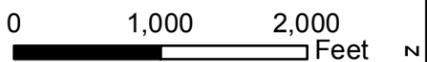
Explanation

-  Project Area
-  Piñon-Juniper
-  Sagebrush
- Ecological Sites**
-  LOAMY 8-10 P.Z.
-  SHALLOW CALCAREOUS SLOPE 8-10 P.Z.
-  Greater Sage-Grouse Preliminary Priority Habitat (PPH)

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Field-Verified Vegetation Communities within the Project Area

Figure 3.2.13b

10/30/2014

the 100 acres of disturbance proposed, approximately five acres of surface disturbance could be associated with Notice-level exploration activities. Approximately 95 acres of proposed surface disturbance activities are associated with phased mineral exploration activities that could occur anywhere throughout the Project Area. Vegetation removal, including ground disturbance, would result in a temporary reduction of breeding habitat for sensitive avian species in the Project Area. Project-related disturbance would result in a temporary loss of foraging habitat for avian species. This acreage would not all be disturbed at one time due to the phased nature of mineral exploration activities. In addition, noise and disturbance activities generated from Project operations would have the potential to cause special status avian species to avoid utilizing specific locations within the Project Area, or the entire Project Area itself, for foraging and other activities.

The Proposed Action includes EPMs to avoid nesting migratory birds, including special status avian species (Section 2.1.9); therefore, the destruction of active nests or disruption of breeding behavior of sensitive avian species would not occur as a result of surface disturbing activities associated with implementation of the Proposed Action. Reclamation would begin at the earliest practicable time within the areas considered inactive, without favorable mineral potential, or completed. Reestablishment of vegetation would take place within three years of Project reclamation. Although improvement of disturbed habitat could occur in the Project Area as surface disturbance is reclaimed and revegetated and a greater amount of habitat becomes available for special status species, short-term indirect impacts to special status species would occur due to the short-term temporary loss of vegetation as a result of Project-related surface disturbance.

The Proposed Action also includes an EPM that utilizes hand-thinning to remove piñon-juniper trees in areas that are determined to be actively encroaching into PPH. Piñon-juniper would be removed from three acres of habitat for every one acre disturbed within PPH in the Project Area. In order to minimize impacts to breeding and nesting greater sage-grouse, piñon-juniper thinning would not occur from March 1st through June 30th. Preferred locations for piñon-juniper removal include areas that have been identified by the BLM, NDOW, or research studies as important migration corridors, riparian areas, or nesting habitat. Preferred treatment locations include areas that would directly benefit greater sage-grouse, such as areas adjacent to the Tonkin Road and Buckhorn Road leks. NUG would consult with the BLM prior to implementing any piñon-juniper removal.

For this EA, the impacts of 300 acres of piñon pine and juniper (piñon-juniper) treatment would be analyzed based on 100 acres of surface disturbance within the Project Area. This is a conservative approach because disturbance is likely to occur in non-PPH. During Phase I, the Project would disturb approximately ten acres of identified PPH (Figure 3.12.1a). Subsequent disturbance would occur in distinct phases; therefore, PPH mitigation would be commensurate with the acreage of each proposed subsequent phase of disturbance within PPH. Field verification by the BLM may be required to determine actual acreage of PPH surface disturbance. PPH mitigation would be completed prior to authorized surface disturbance. Piñon-juniper removal would result in periodic, temporary disturbance to wildlife during the implementation phase.

The proposed greater sage-grouse EPM would result in short-term, temporary disturbance to wildlife during the implementation phase. To minimize impacts to migratory birds, site surveys

would be conducted (from March 1st through July 31st) by a qualified biologist to determine the presence of nesting birds. Crew members would be trained to identify nesting bird behavior and instructed to inspect trees for nests before cutting. (To date this has been the most effective strategy for avoiding impacts to tree nesting birds.)

Surface disturbing activities may also increase the spread of noxious weeds and invasive plant species. A single noxious weed population of hoary cress was identified in the Project Area. In addition, pale madwort, desert madwort, curvseed butterwort, crossflower, saltlover, prickly lettuce, prickly Russian thistle, tall tumbledustard, field pennycress, yellow salsify, and cheatgrass, all invasive non-native species, were observed within the Project Area. The quality of the habitat may be reduced for sensitive species if noxious weeds and invasive plant species increase within the Project Area. NUG would utilize BMPs, as outlined in Section 2.1.9, to reduce the potential for the increase of noxious weeds and invasive plant species both during surface disturbance and reclamation.

Impacts to the individual sensitive species observed in the Project Area are further discussed below.

Greater Sage-Grouse

There are approximately 1,054 acres identified as PPH within the Project Area, and no acres of PGH. Greater sage-grouse scat was observed in eight locations throughout the Project Area, with the majority concentrated in the northwest portion of the Project Area primarily in the mapped PPH, but with some on the border and outside the mapped PPH. There are 24 proposed drill sites, approximately 29,100 linear feet of proposed constructed roads, and approximately 2,639 linear feet of proposed overland travel under Phase I activities (approximately 10.6 acres) within the area designated on the BLM and United States Forest Service habitat maps as PPH. A field inspection conducted by the NDOW and BLM on June 24, 2014, verified the areas identified on the map as PPH. Greater sage-grouse can be sensitive to discrete disturbances, which are defined as disturbances that have a distinct measurable impact in time and space (BLM 2012b).

The impacts associated with this Project are temporary. Potential impacts to foraging and nesting habitat may occur as a result of exploration activities; however, disturbance would be created incrementally and dispersed throughout the Project Area and would be reclaimed and revegetated. Exploration activities that are proposed under Phase I would be located greater than four miles from active sage grouse leks, so noise assessment determinations would not be necessary. However, depending on the actual location of subsequent phased exploration activities, noise assessments may be required by the BLM and would be conducted according to the draft statewide wildlife survey protocols. If it is determined that noise assessments would be required they would be conducted prior to any surface disturbance activities.

Through the implementation of the proposed applicant committed EPM, sage grouse habitat in the Project Area would be improved through the removal of piñon-juniper, which has encroached into sagebrush communities (Figure 3.12.1b). The 2014 Nevada Greater Sage-grouse Conservation Plan (Sagebrush Ecosystem Program 2014) ranks piñon-juniper as the second highest threat next to fire and invasive plants. Studies have shown that the removal of

piñon-juniper have benefited sage grouse in as little as two to three years post treatment (Commons et al. 1999).

Ferruginous Hawk

Ferruginous hawk was observed in the Project Area. Project-related activities would directly affect potential ferruginous hawk habitat through removal of vegetation in areas proposed for surface disturbance. A maximum of 100 acres of habitat would be directly removed over the ten-year Project life as a result of surface disturbing activities associated with implementation of the Proposed Action. Potential impacts to breeding from the Project would include possible direct loss of nests (e.g., crushing) or indirect effects (e.g., abandonment) from increased noise and human presence within close proximity to an active nest site. Implementation of the EPM outlined in Section 2.1.9 for migratory birds would ensure that prior to surface disturbance a nesting survey for migratory birds (including ferruginous hawk) would be conducted and nests avoided if exploration activities occur during the avian breeding season. Vegetation removal would result in a reduction of breeding habitat for ferruginous hawk in the Project Area. This acreage would not all be disturbed at one time due to incremental disturbance and concurrent reclamation of the surface exploration disturbance.

Brewer's Sparrow

Brewer's sparrow was observed in the Project Area. Project-related activities would directly affect potential Brewer's sparrow habitat through removal of vegetation in areas proposed for surface disturbance. A maximum of 100 acres of habitat would be directly removed over the ten-year Project life as a result of surface disturbing activities associated with implementation of the Proposed Action. Potential impacts to breeding from the Project would include possible direct loss of nests (e.g., crushing) or indirect effects (e.g., abandonment) from increased noise and human presence within close proximity to an active nest site. Implementation of the EPM outlined in Section 2.1.9 for migratory birds would ensure that prior to surface disturbance, a nesting survey for migratory birds (including Brewer's sparrow) would be conducted and nests avoided if exploration activities occur during the avian breeding season. Vegetation removal would result in a reduction of breeding habitat for Brewer's sparrow in the Project Area. This acreage would not all be disturbed at one time due to incremental disturbance and concurrent reclamation of the surface exploration disturbance.

3.2.14 Vegetation

3.2.14.1 Affected Environment

The Project Area is within the Intermountain Region, Great Basin Division, Central Great Basin Section floristic zone (Cronquist et al. 1972). The following eight ecological sites were observed within the Project Area during June 2013 field surveys: PIMO-JUOS WSG: 0R0501 (Ecological Site ID No. R024XY049NV); PIMO-JUOS WSG: 0R0504 (Ecological Site ID No. R024XY051NV); Loamy 8-10 P.Z. (Ecological Site ID No. R024XY005NV); Loamy 8-10 P.Z. (Ecological Site ID No. R028BY010NV); Shallow Calcareous Loam 8-10 P.Z. (Ecological Site ID No. R028BY011NV); Shallow Calcareous Slope 8-10 P.Z. (Ecological Site ID No. R028BY016NV); Shallow Calcareous Slope 14+ P.Z. (Ecological Site ID

No. R028BY027NV); and Claypan 12-14 P.Z. (Ecological Site ID No. R028BY037NV) (Figure 3.2.14).

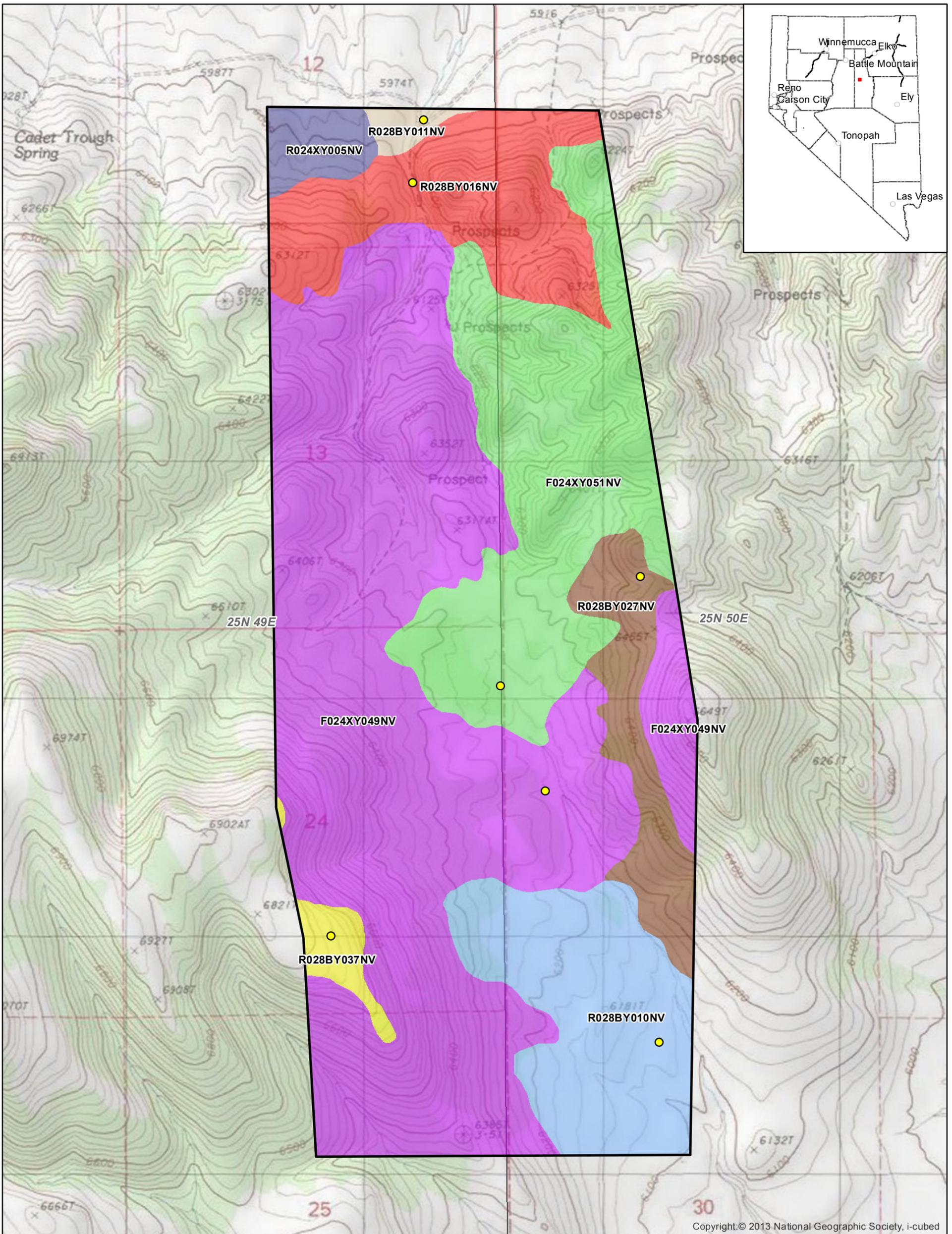
PIMO/JUOS WSG: 0R0501

The PIMO/JUOS WSG: 0R0501 ecological site (Ecological Site ID No. R024XY049NV) covers approximately half the entire Project Area (approximately 878 acres) and is located on mountain and hill summits and slopes of all aspects throughout the Project Area. The Ecological Site Description (ESD) describes this woodland vegetation community as dominated by singleleaf piñon and Utah juniper, with mountain big sagebrush (*Artemisia tridentata* spp. *vaseyana*) as the principal understory shrub and bluebunch wheatgrass (*Pseudoroegneria spicata*), Indian ricegrass (*Achnatherum hymenoides*), and Thurber's needlegrass (*Achnatherum thurberianum*) as the most prevalent understory grasses (USDA 1973).

The dominant species observed in this ecological site were singleleaf piñon and Utah juniper, with mountain big sagebrush and black sagebrush (*Artemisia nova*) as the primary understory shrubs. The principal understory forbs found within this community include the following: matted buckwheat (*Eriogonum caespitosum*); Nevada lupine (*Lupinus nevadensis*); fernleaf biscuitroot (*Lomatium dissectum*); tapertip hawkbeard (*Crepis acuminata*); cushion buckwheat (*Eriogonum ovalifolium*); shortstem lupine (*Lupinus brevicaulis*); granite prickly phlox (*Phlox hoodii*); desert globemallow (*Sphaeralcea ambigua*); arrowleaf balsamroot (*Balsamorhiza sagittata*); stemless mock goldenweed (*Stenotus acaulis*); Holboell's rockcress (*Arabis holboellii*); Douglas' dustymaiden (*Chaenactis douglasii*); Anderson's larkspur (*Delphinium andersonii*); and granite prickly phlox (*Linanthus pungens*). The dominant grass species observed in this ecological site include: squirreltail (*Elymus elymoides*); Thurber's needlegrass; Sandberg bluegrass (*Poa secunda*); bluebunch wheatgrass; and Indian ricegrass. Hairy woollygrass (*Erioneuron pilosum*), basin wildrye (*Leymus cinereus*), crested wheatgrass (*Agropyron cristatum*), and needleleaf sedge (*Carex duriuscula*) were additional, less abundant grass species found in this ecological site. Mormon tea (*Ephedra viridis*), broom snakeweed (*Gutierrezia sarothrae*), and plains pricklypear (*Opuntia polyacantha*) were three additional shrub species that were prevalent within this ecological site. Additional forb species that were scattered throughout this vegetative community include: pale agoseris (*Agoseris glauca*); darkred onion (*Allium atrorubens*); basalt milkvetch (*Astragalus filipes*); Humboldt River milkvetch (*Astragalus iodanthus*); woollypod milkvetch (*Astragalus purshii*); sego lily (*Calochortus nuttallii*); desert paintbrush (*Castilleja angustifolia* var. *dubia*); and foothill deathcamas (*Zigadenus peniculatus*). Within this piñon and juniper dominated ecosystem, inclusions of shrublands dominated by either black sagebrush or mountain big sagebrush were present. In the mid-northwestern region of the Project Area, a dry drainage was also observed as an inclusion containing narrowleaf willow (*Salix exigua*), golden currant (*Ribes aureum*), and mountain rush (*Juncus arcticus* ssp. *littoralis*).

PIMO-JOUS WSG: 0R0504

The PIMO-JOUS WSG: 0R0504 ecological site (Ecological Site ID No. R024XY051NV) covers approximately 337 acres from the middle to the northeastern portion of the Project Area. This woodland ecological site occurs on mountain summits and slopes of all aspects. The ESD describes this vegetation community as dominated by singleleaf piñon and Utah juniper with black sagebrush as the principal understory shrub and bluebunch wheatgrass, Indian ricegrass,



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Explanation

- Project Area
- F024XY049NV, PIMO-JUOS WSG: 0R0501
- F024XY051NV, PIMO-JUOS WSG: 0R0504
- R024XY005NV, Loamy 8-10 P.Z.
- R028BY010NV, Loamy 8-10 P.Z.
- R028BY011NV, Shallow Calcareous Loam 8-10 P.Z.
- R028BY016NV, Shallow Calcareous Slope 8-10 P.Z.
- R028BY027NV, Shallow Calcareous Slope 14+ P.Z.
- R028BY037NV, Claypan 12-14 P.Z.

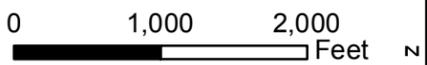
Ecological Site Reference Location

- July 23, 2013

BATTLE MOUNTAIN DISTRICT OFFICE
 Mount Lewis Field Office
 50 Bastian Road
 Battle Mountain, Nevada 89820



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.



BUREAU OF LAND MANAGEMENT

CMZ EXPLORATION PROJECT

Ecological Sites within the Project Area

Figure 3.2.14

10/30/2014

Thurber's needlegrass, and Sandberg bluegrass as the most prevalent understory grasses (USDA 1973).

Singleleaf piñon, Utah juniper, and black sagebrush were the dominant plant species observed within this ecological site. Additional prevalent shrubs found were Mormon tea and littleleaf horsebrush (*Tetradymia glabrata*). The primary grass species identified were Sandberg bluegrass and Indian ricegrass. Mat rockspirea (*Petrophytum caespitosum*) and roughseed cryptantha (*Cryptantha flavoculata*) were common forb species observed within this ecological site.

Loamy 8-10 P.Z.

The Loamy 8-10 P.Z. ecological site (Ecological Site ID No. R024XY005NV) covers approximately 34 acres of the northwestern corner of the Project Area. This ecological site occurs on lower mountains, hills, and fan remnants on all exposures. The ESD describes the reference vegetation community as dominated by Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) and deep-rooted, cool season, perennial bunchgrasses such as bluebunch wheatgrass, Indian ricegrass, and Thurber's needlegrass (USDA 1973).

This ecological site appeared to have undergone a disturbance (possibly a fire) within the Project Area and anthropogenic reseeding with forage kochia (*Bassia prostrata*), crested wheatgrass, and squirreltail dominated the landscape. Wyoming big sagebrush was also present in this ecological site but was not as prevalent as the other three dominant plant species.

Loamy 8-10 P.Z.

The Loamy 8-10 P.Z. ecological site (Ecological Site ID No. R028BY010NV) covers approximately 203 acres of the southeastern corner of the Project Area. This ecological site occurs on fan piedmonts, rock pediments, and low rolling hills. The ESD describes this vegetation community as dominated by Wyoming big sagebrush, Indian ricegrass, and needle and thread (*Hesperostipa comata*) (USDA 1973).

The dominant plant species observed in the Loamy 8-10 P.Z. ecological site were mountain big sagebrush, black sagebrush, singleleaf piñon, Utah juniper, and broom snakeweed. Needle and thread, crested wheatgrass, squirreltail, Indian ricegrass, and Sandberg bluegrass were the dominant grass species in this ecological site. Common forb species observed within this vegetation community include the following: fernleaf biscuitroot; roughseed cryptantha; cushion buckwheat; lava aster (*Ionactis alpina*); spiny phlox; thickstem wild cabbage (*Caulanthus crassicaulis*); tufted evening primrose (*Oenothera caespitosa*); tapertip hawksbeard; and whitestem blazingstar (*Mentzelia albicaulis*). Other shrubs observed within this ecological site were rubber rabbitbrush (*Ericameria nauseosa*), littleleaf horsebrush, fourwing saltbush (*Atriplex canescens*), and shadscale saltbush (*Atriplex confertifolia*).

Shallow Calcareous Loam 8-10 P.Z.

The Shallow Calcareous Loam 8-10 P.Z. ecological site (Ecological Site ID No. R028BY011NV) covers approximately 12 acres in the northern portion of the Project Area. This ecological site occurs on the slopes and summits of lower piedmont slopes and low hills on

all exposures. The ESD describes this vegetation community as dominated by black sagebrush, Indian ricegrass, and needle and thread (USDA 1973).

Similar to the Loamy 8-10 P.Z. ecological site, this ecological site appeared to have undergone a disturbance (possibly a fire) within the Project Area and anthropogenic reseeding with forage kochia, crested wheatgrass, basin wildrye, Indian ricegrass, and squirreltail dominated the landscape.

Shallow Calcareous Slope 8-10 P.Z.

The Shallow Calcareous Slope 8-10 P.Z. ecological site (Ecological Site ID No. R028BY016NV) covers approximately 175 acres in the northern portion of the Project Area. This ecological site primarily occurs on steep slopes of fan piedmonts, rock pediments, and low hills, but also occurs on beach plains and alluvial flats where soils are extremely droughty. The ESD describes this vegetation community as dominated by black sagebrush, Indian ricegrass, and needle and thread (USDA 1973).

The observed dominant vegetation within this ecological site includes black sagebrush, mountain big sagebrush, and Indian ricegrass with Utah juniper scattered throughout this shrubland ecological site. Unlike the ecological site described by the ESD, needle and thread was not observed within the ecological site during the June 2013 field surveys.

Shallow Calcareous Slope 14+ P.Z.

The Shallow Calcareous Slope 14+ P.Z. ecological site (Ecological Site ID No. R028BY027NV) covers approximately 97 acres in the eastern portion of the Project Area. This ecological site occurs on mountain slopes regardless of exposure. The ESD describes this vegetation community as dominated by black sagebrush and bluebunch wheatgrass.

The observed dominant vegetation in this ecological site was black sagebrush. Mountain big sagebrush, Sandberg bluegrass, and Utah juniper were also prevalent plant species in this vegetation community. Unlike the ecological site described by the ESD, bluebunch wheatgrass was not identified as a dominant grass species within the ecological site during the June 2013 field surveys.

Claypan 12-14 P.Z.

The Claypan 12-14 P.Z. ecological site (Ecological Site ID No. R028BY037NV) covers approximately 25 acres in the southwestern portion of the Project Area. This ecological site occurs on summits and slopes of mountains, hills, and piedmont slopes on all aspects. The ESD describes this vegetation community as dominated by bluebunch wheatgrass, Thurber's needlegrass, or western needlegrass (*Achnatherum occidentale*) and low sagebrush (USDA 1973).

The observed dominant plant species in this ecological site were Wyoming big sagebrush and basin wildrye. Rockspirea (*Holodiscus dumosus*) and wax currant (*Ribes cereum*) were both prominent shrubs on the rock outcrops within this vegetation community. Another prominent shrub was yellow rabbitbrush (*Chrysothamnus viscidiflorus*). The common forbs within this

ecological site include: Nevada lupine; arrowleaf balsamroot; cushion buckwheat; and fernleaf biscuitroot. Oregon cliff fern (*Woodsia oregano*) was also present among the rock outcrops in this vegetation community. The observed vegetation community within this ecological site differs from the vegetation community described by the ESD.

Under the Proposed Action, the applicant has proposed an EPM to remove piñon-juniper that have encroached into identified PPH for greater sage-grouse. The implementation of the greater sage-grouse EPM would maintain and enhance habitat for a variety of wildlife species, especially greater sage-grouse, by reducing one of the most important threats to that habitat: encroachment by piñon-juniper trees. While piñon-juniper, especially old-growth stands, have important value as wildlife habitat, these trees, in the absence of periodic fire or other disturbance, often expand their distribution and proliferate at the expense of other plant community species (Tausch et al. 1981; Schaefer et al. 2003; Nallion et al. 1999; Weisberg and Greenwood, 2007; Tausch et al. 2009).

3.2.14.2 Environmental Consequences

Approximately 100 acres would be disturbed over the ten-year Project life as a result of implementation of the Proposed Action. Of the 100 acres of proposed disturbance, five acres of disturbance could occur from Notice-level exploration activities on public lands. Approximately 95 acres of proposed disturbance is associated with phased surface exploration activities that could occur anywhere within the Project Area. The surface exploration disturbance would be created incrementally and would be dispersed throughout the Project Area.

The potential surface disturbance to each ecological site as a result of the implementation of the Proposed Action is shown in Table 3.2-5. The surface disturbance associated with exploration activities within the Project Area would be reclaimed and reseeded concurrently whenever feasible. Any surface disturbance related to the Proposed Action would not result in the loss of any unique vegetation community, but would still result in a temporary loss of vegetation. Reclamation associated with the Proposed Action would begin upon completion of Project activities using the BLM-approved seed mixture shown in Table 2.1-2. Monitoring activities are included in the Proposed Action, which would ensure that the revegetation meets reclamation standards.

Table 3.2-5: Potential Surface Disturbance to Ecological Sites within the Project Area

Ecological Site	Soil Series	Acres in Project Area	Potential Surface Disturbance	
			Acres	Percent
PIMO-JOUS WSG: 0R0501 (#F024XY049NV)	Shagnasty-Softscrabble	878	0 to 100	0 to 11
PIMO-JOUS WSG: 0R0504 (#F024XY051NV)	Hopeka-Solack-Rock outcrop	337	0 to 100	0 to 30
Loamy 8-10 P.Z. (#R024XY005NV)	Allker gravelly sandy loam, 2 to 8 percent slopes	34	0 to 34	0 to 100

Ecological Site	Soil Series	Acres in Project Area	Potential Surface Disturbance	
			Acres	Percent
Loamy 8-10 P.Z. (#R028BY010NV)	Fortank very stony loam, 4 to 8 percent slopes	204	0 to 100	0 to 49
Shallow Calcareous Loam 8-10 P.Z. (#R028BY011NV)	Nuc-Maghills complex, 2 to 8 percent slopes	12	0 to 12	0 to 100
Shallow Calcareous Slope 8-10 P.Z. (#R028BY016NV)	Akerue-Simpark-Robson	175	0 to 100	0 to 57
Shallow Calcareous Slope 14+ P.Z. (#R028BY027NV)	Chad-Cleavage-Softscrabble	97	0 to 97	0 to 100
Claypan 12-14 P.Z. (#R028BY037NV)	Walti-Softscrabble-Robson	25	0 to 25	0 to 100

As part of the Proposed Action, the implementation of the greater sage-grouse EPM would help to maintain and enhance diverse natural plant communities in good ecological condition, exhibiting strong soil/slope stabilizing characteristics. Reducing the spread of piñon-juniper expansion woodlands, and/or their transition to increasingly tree-dominated states, is expected to sustain and stimulate herbaceous plant vigor, maintain water infiltration capacity, and reduce soil erosion potential (Reid et al. 1999; Pierson et al. 2007). Conifer competition with shrubs, grasses and forbs would be reduced, preserving and propagating these species, which are especially important for wildlife.

3.2.15 Visual Resources

3.2.15.1 Affected Environment

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 (Table 3.2-6). Each management class portrays the relative value of the visual resources and serves as a tool that describes the visual management objectives (BLM 1986b).

Lands within the Project Area are currently designated as VRM Class IV. The activities associated with mineral exploration and surface disturbance may require modifying the existing character of the landscape. There has been previous surface disturbance from mineral exploration and road construction activities in the Project Area. In addition, the Project Area is located approximately 58 miles northwest of Eureka, Nevada, and is not visible from any major highway.

Table 3.2-6: 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

3.2.15.2 Environmental Consequences

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 concurrent and successful reclamation of exploration roads and revegetation, long-term visual impacts would be reduced and would remain within management objectives for Class IV. The objective of Class IV is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt would be made to minimize the impacts of these activities through careful location, minimal disturbance, and repeating the basic elements (BLM 1986b). The effects of the Proposed Action on visual resources would be consistent with BLM prescribed Class IV VRM objectives.

To conform to the VRM standards discussed above, during any greater sage-grouse EPM implementation, the edges of treated areas would be “feathered” and would follow the contours of the landscape, in order to avoid the appearance of obvious human influence. Experience with similar piñon-juniper thinning projects in the past has shown that the visual impacts are relatively unobtrusive in the short term and almost unnoticeable after two years, when needles have fallen from downed trees. In the long term, greater sage-grouse EPM implementation may result in a visual aspect preferable to one dominated and obscured by dense stands of conifers that may result without the greater sage-grouse EPM.

3.2.16 **Wastes, Solid or Hazardous**

3.2.16.1 Affected Environment

Federal hazardous material and waste laws and regulations are applicable to hazardous substances used, stored, or generated by the Project. Applicable federal laws would include the

following: the Resource Conservation and Recovery Act of 1976; Hazardous and Solid Waste Amendments; Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA [aka Superfund]); and the Superfund Amendments and Reauthorization Act of 1986. Pursuant to regulations promulgated under Section 102 of CERCLA, as amended, release of a reportable quantity of a hazardous substance to the environment in a 24-hour period must be reported to the National Response Center (40 CFR Part 302). A release of a reportable quantity on public land must also be reported to the BLM.

Similarly, State of Nevada hazardous material and waste laws and regulations are applicable to hazardous substances used, stored, and generated by the operation of the Project. NAC 445A.240 requires immediate reporting of a release of a reportable quantity of a hazardous substance to the NDEP, based on Table 302.4 in 40 CFR Part 302.

Hazardous materials utilized at the Project Area would include diesel fuel, gasoline, and lubricating grease. Approximately 500 gallons of diesel fuel would be stored in fuel delivery systems on vehicles and drill rigs. Approximately 100 gallons of gasoline would be stored in fuel delivery systems for light vehicles. Approximately 100 pounds of lubricating grease would be stored on the drill rigs or transported by drill trucks. All containers of hazardous substances would be labeled and handled in accordance with NDOT and MSHA standards.

All refuse generated by the Project would be disposed of at an authorized landfill facility off site, consistent with applicable regulations. No refuse would be disposed of on site. Portable chemical toilets would be available in the Project Area for use by Project personnel. The human waste and portable chemical toilets would not be buried on site.

3.2.16.2 Environmental Consequences

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 2.1.4 of this EA outlines how these wastes and materials would be managed and stored.

Through the implementation of the spill measures outlined in Appendix D of the Plan and the EPMs outlined in Section 2.1.9 of this EA, no impacts to the environment from wastes are anticipated as a result of the Proposed Action. This resource will not be carried forward for further analysis.

3.2.17 Water Quality

3.2.17.1 Affected Environment

Surface Water

Surface water within the Project Area is mainly dependent upon seasonal precipitation. The Project Area receives moderate levels of precipitation, with moderate fluctuations in seasonal temperatures. The average annual precipitation is approximately ten inches and tends to peak in

May (WRCC 2013). Most of the rainfall in this portion of Nevada occurs as high-intensity, convective thunderstorms in spring and autumn (USDA 2006).

The Project is located within the Pine Valley hydrographic basin. This hydrographic basin is typical of arid drainage basins in northern Nevada, where precipitation is generally insufficient to support perennial stream flow except where spring fed.

There are no perennial drainages or springs in the Project Area. One marginally-formed ephemeral drainage located in the northern portion of the Project Area was identified during May and June 2013 field surveys. Surface water runoff from the northern half of the Project Area flows north into Horse Creek Valley, while surface water runoff from the southern half of the Project Area flows southeast into Denay Valley.

Ground Water

Based on previous exploration drilling in the Project Area, the discovered ground water depth ranged between 400 and 1,000 feet depending on the surface elevation. Anticipated drill hole depth associated with the Project would be on average 1,500 feet below ground surface.

3.2.17.1 Environmental Consequences

Surface Water

Surface water features within the Project Area are limited to one ephemeral drainage that traverses the Project Area in a southwest-northeast trend. The only potential impacts to surface water quality would result from spills and sedimentation or erosion from surface disturbing activities. The potential impacts to surface water quality from spilled petroleum products would be minimized by the implementation of the Spill Contingency Plan included in Appendix D of the Plan. The potential impacts to surface water quality from sedimentation would be minimized by the implementation of the EPMs outlined in Section 2.1.9.

Ground Water

3.2.17.1.1 Ground Water Quantity

No hydrological areas would be affected by the Proposed Action. The Proposed Action would be expected to require water only for dust suppression and drilling fluids, and could total up to 18,000 gallons per day. NUG would acquire this water from Barrick's Lodge at Pine Valley through a verbal agreement. Alternatively, water is available through Tonkin Springs mine. Both of these sources have existing valid water rights. No new water developments or water rights applications are anticipated associated with the Project. The Nevada Division of Water Resources appropriates water use which is out of the BLM's jurisdiction.

3.2.17.1.2 Ground Water Quality

No ground water quality data are available from water encountered in drill holes during previous drilling activities within the Project Area. The Proposed Action is not expected to impact ground water quality because the drill holes would be abandoned in accordance with NRS 534,

NAC 534.4369 and NAC 534.4371. No drill holes would be left open at the end of the Project. In addition, only water or nontoxic fluids would be used during drilling. No further analysis is required for this element in this EA.

3.2.18 Wild Horses

3.2.18.1 Affected Environment

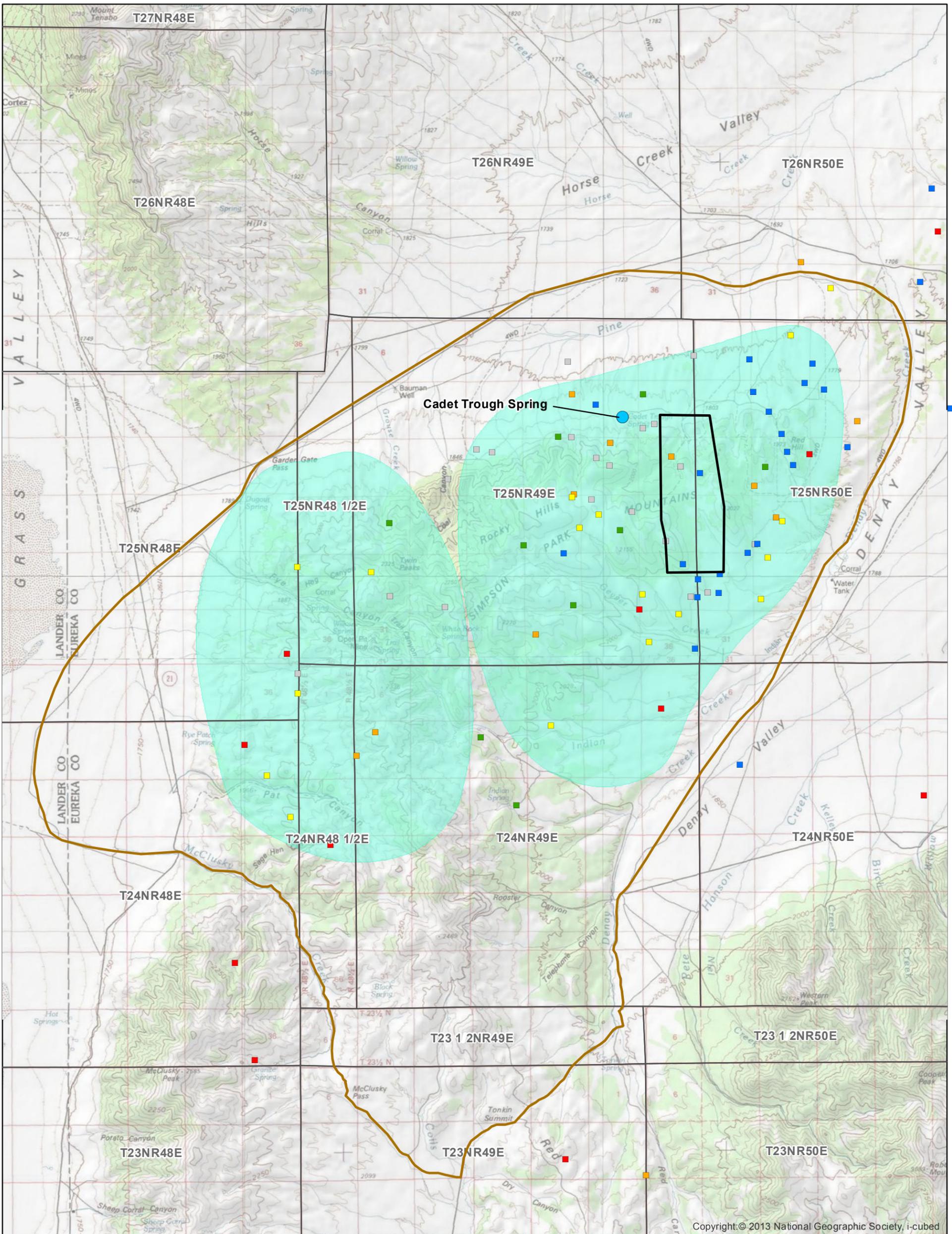
The BLM manages wild horses under the authority of the Wild Free-Roaming Horses and Burros Act of 1971 as amended (P.L. 92-195) which states that the BLM “shall manage wild free-roaming horses and burros in a manner that is designed to achieve and maintain a thriving natural ecological balance on the public lands.” The Project Area lies within the Rocky Hills Herd Management Area (HMA). The size of the HMA totals approximately 83,998 acres, is 15 miles wide by 13 miles long, and encompasses the Rocky Hills and Simpson Park Mountains.

The Rocky Hills HMA is comparatively one of the smallest HMAs managed by the Battle Mountain Field Office. The Appropriate Management Level established for the HMA is a range from 86 to 143 wild horses. The current estimated population is 130 wild horses based on the direct count obtained during the August 2012 helicopter inventory and estimated herd growth since that time. Water in the HMA is somewhat limited, so wild horses make concentrated use of Cadet Spring, which is outside of the Project Area boundary. Other water sources available include scattered springs and small perennial streams. Many water sources are located on private land and have been fenced.

Inventory data between 2002 and 2012 showed that the majority of the wild horses concentrated in the Simpson Park Mountains in the northeastern portion of the HMA. Other groups were scattered along the foothills of Grass Valley and the headwaters of Indian Creek. Few horses were observed in the southern portion of the HMA south of Rooster Canyon. Fences in the southern portion of the HMA restrict wild horse movement into the southern portion of the HMA south of Rooster Canyon and near the Tonkin Mine. The proposed Project is located within an area of the Rocky Hills HMA that is known for concentrated use by wild horses. The concentrated use areas were documented following analysis of inventory data within the HMA, and represent heavily used habitat by the wild horses as reflected by distribution over time, and documented in the inventories (Figure 3.2.18).

In January 2009 and December 2010, helicopter gathers were conducted in the HMA in order to remove excess wild horses and to implement fertility control to reduce population growth. The results of the most recent helicopter inventory show marked reductions in the number of foals observed, which was as low as 7.2 percent, compared to 17.4 percent in 2009 before the fertility control was effective.

The horses in the Rocky Hills HMA are relatively large in size, with some animals reaching 16 hands high. Colors include pinto and appaloosa in addition to brown, bay, black, red roan, buckskin, chestnut and grulla (mouse colored).



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Explanation

- Project Area
- Rocky Hills HMA
- Cadet Trough Spring
- High Usage Areas

Rocky Hills Inventory 2002-2012

- 2002
- 2005
- 2008
- 2009
- 2010
- 2012

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 Mount Lewis Field Office
 50 Bastian Road
 Battle Mountain, Nevada 89820



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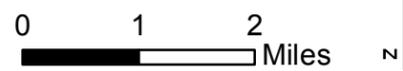
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CMZ EXPLORATION PROJECT

Wild Horse High Usage Areas and Inventory Data

Figure 3.2.18

10/30/2014



3.2.18.2 Environmental Consequences

The Rocky Hills HMA is limited in space, forage, and water, and wild horse distribution is heavily influenced by water sources. Impacts to wild horses could be caused by increased human activity, increased vehicle traffic on Project roads, and noise associated with drilling and construction activities. It is expected that wild horses would avoid drill sites during drilling activities and increase use in other portions of the HMA, which could result in changes to usage patterns and distribution within the HMA.

Approximately 100 acres of the 83,998-acre Rocky Hills HMA would be disturbed by the Project, which equals approximately 0.1 percent of the HMA; however, the 1,760-acre Project Area within which the increased human disturbance would take place represents 2.1 percent of the HMA. Impacts to the wild horses through human disturbance could cause them to reduce or eliminate use of a larger land area than the Project Area itself, increasing use of other portions of the small HMA over the life of the Project.

Changes to patterns of use by wild horses within the HMA caused by increased vehicle traffic, road construction, and human presence would cause the wild horses to use the Project Area less, and increase use in other areas within the HMA. This could cause impacts to the other areas within the HMA if increased use causes degradation to the vegetation and water sources. If widespread human activity disturbs the population during peak foaling season (March 1-June 30), newborn foals could be orphaned or abandoned.

Potential impacts to the normal distribution and movement patterns of wild horses and burros would likely be temporary in nature, would not result in permanent displacement, but would occur over the ten-year life of the Project. Since the Project would be phased, and no more than two drill rigs would be present within the Project Area at any one time, the wild horses may adapt to the noise created by exploration activities such as road traffic, road construction and drilling. Some wild horses may avoid the area while others may tolerate the noise and continue foraging and breeding activities in the vicinity of the Project Area.

There are no perennial water sources located in the Project Area to provide regular sources of drinking water to wild horses; however, Cadet Trough Spring is located just 0.66 mile outside the Project Area boundary within the HMA and is heavily used by concentrations of wild horses in the area as documented during field monitoring and helicopter inventories. Additionally, the 1,760-acre Project Area overlaps an area used as a travel corridor to Cadet Trough Spring by wild horses as documented during inventory flights and field monitoring. For these reasons, the travel patterns in the area could be modified during periods of activity in the Project Area.

During the phased approach of the Project and planned reclamation, there would be no expected substantial or permanent impacts to forage availability for wild horses in the HMA.

As part of the Proposed Action, implementation of the greater sage-grouse EPM may cause a short-term disruption of wild horse movements and habitat use as a result of human activity and chainsaw noise. In the long term (greater than one year), habitat quality for wild horses would be enhanced as understory vegetation, particularly grasses and forbs, are protected from competitive exclusion by piñon-juniper.

Mitigation

In order to mitigate the loss of habitat or impacts to water sources to wild horses as a result of the Proposed Action, NUG would provide the following mitigation measures:

- Development or enhancement of existing water sources(s) within or nearby the proposed Project Area boundary such as Cadet Trough Spring. The site consists of an existing small spring, which includes existing spring enhancements (fences, pipes, and troughs) that are not currently functioning. Proposed improvements would include the installation of a protective fence around the historic spring area, piping of the water to an appropriate location(s), and installation of suitable and durable troughs. Upon Project completion, improvements associated with the spring would remain in place for continued support of wild horses, wildlife, and livestock.
- No activities shall block access to water, and human presence near water sources would be minimized to the extent possible.
- If operations cause a water source to become unavailable to wild horses, the Authorized Officer may require another water development to be constructed in the general area to provide adequate water for the wild horses or burros. Additional measures for the protection of wild horses and burros may be required, such as timing/seasonal restrictions and access route restrictions during the peak foaling period within the concentrated use areas identified in the HMA.
- NUG would immediately report any conflicts with or concerns about wild horses in the Project Area to the Field Office Wild Horse and Burro Specialist.

3.2.19 Wildlife

3.2.19.1 Affected Environment

A total of two reptiles and eight mammals were directly observed or detected in the Project Area by tracks, scat, feathers, call, prey remains, or burrows during the May and June 2013 surveys (Enviroscientists 2013). The general wildlife species detected in the Project Area are common throughout the Great Basin region. The reptiles observed in the Project Area were the sagebrush lizard (*Sceloporus graciosus*) and western fence lizard (*Sceloporus occidentalis*). Mammals detected in the Project Area included the following: black-tailed jackrabbit (*Lepus californicus*); chipmunk (*Neotamias* spp.); coyote (*Canis latrans*); mountain cottontail (*Sylvilagus nuttallii*); mule deer (*Odocoileus hemionus*); pronghorn antelope (*Antilocapra americana*); woodrat (*Neotoma* spp.); and yellow-bellied marmot (*Marmota flaviventris*).

Big game species

Two big game species were detected in the Project Area during the May and June 2013 surveys (Enviroscientists 2013).. Mule deer scat, tracks, sheds, beds, and skeletal remains were observed in the Project Area. Pronghorn antelope scat and tracks were noted in the lower elevation

portions of the Project Area. The NDOW also noted that occupied mule deer and pronghorn antelope distribution was located in the northwestern portion of the Project Area (NDOW 2013).

Small game species

Mountain cottontail was the only small game species observed in the Project Area during the May and June 2013 surveys (Enviroscientists 2013).

Under the Proposed Action, the applicant has proposed an EPM to remove piñon-juniper that have encroached into PPH for greater sage-grouse. The implementation of the greater sage-grouse EPM would maintain and enhance habitat for a variety of wildlife species, especially greater sage-grouse, by reducing one of the most important threats to that habitat: encroachment by piñon-juniper trees. While piñon-juniper, especially old-growth stands, have important value as wildlife habitat, these trees, in the absence of periodic fire or other disturbance, often expand their distribution and proliferate at the expense of other plant community species (Tausch et al. 1981; Schaefer et al. 2003; Nallion et al. 1999; Weisberg and Greenwood 2007; Tausch et al. 2009).

3.2.19.2 Environmental Consequences

Direct impacts to wildlife would consist of temporary habitat loss and disturbance from human activity and noise. Approximately 100 acres would be disturbed over the potential ten-year Project life as a result of implementation of the Proposed Action. Of the 100 acres of disturbance proposed, up to five acres of disturbance could occur from Notice-level exploration activities. Approximately 95 acres of proposed disturbance associated with surface exploration activities could occur anywhere within the Project Area. The surface exploration disturbance would be created incrementally and would be dispersed throughout the Project Area.

No long-term impacts to wildlife habitat are likely to occur within the Project Area since reclamation would be designed to return disturbed lands to a level of productivity comparable to pre-exploration levels. After exploration activities have been terminated, reclamation would involve regrading disturbed areas related to this Project to their approximate original contour and would be completed no later than two years after the completion of activities under the Proposed Action. Additionally, sumps associated with drill sites would be built with an incline on one end so entrapped animals could easily exit the sump, or would be adequately fenced to preclude access.

Exploration activities, including the construction of roads and overland travel, could disturb wildlife due to the presence of humans and by creating noise and dust. However, wildlife foraging activities within the Project Area could continue since the proposed surface disturbance activities only cover approximately 5.7 percent of the entire Project Area (100 acres out of a total of 1,760 acres). Indirect, short-term impacts to wildlife would occur due to the temporary loss of vegetation as a result of Project-related surface disturbance.

A single noxious weed population of hoary cress was identified in the Project Area. In addition, pale madwort, desert madwort, curvseed butterwort, crossflower, saltlover, prickly lettuce, prickly Russian thistle, tall tumbled mustard, field pennycress, yellow salsify, and cheatgrass, all invasive non-native species, were observed within the Project Area. These species were

primarily observed in previously disturbed areas intermixed with native species, and no monocultures of these species were noted in the Project Area. These invasive, non-native species reduce the quality of habitat for wildlife. Project-related activities increase the potential for the spread of these species; thus further reducing the quality of wildlife habitat in the Project Area. NUG would implement EPMs for noxious weeds, outlined in Section 2.1.9, which would mitigate or reduce the impact of noxious weeds and invasive species to wildlife habitat.

As part of the Proposed Action, implementation of the greater sage-grouse EPM may cause a short-term disruption of wildlife movement and habitat use as a result of human activity and chainsaw noise. In the long term (greater than one year), habitat quality for wildlife would be enhanced as understory vegetation, particularly grasses and forbs, are protected from competitive exclusion by piñon-juniper.

Impacts to specific wildlife groups are discussed in more detail below.

Small mammals

Due to ground disturbing activities, there would be a potential of direct mortality to small mammals (e.g., being crushed by vehicles or equipment). Ground disturbing activities would also impact small mammal habitat by removing vegetation and rocks and disturbing burrows. These impacts would be short-term, and habitat could be restored during reclamation.

Large mammals

Large mammals, such as mule deer and pronghorn antelope, may avoid the Project Area due to noise generated by the Project. Other large mammals, such as coyotes, could adapt to the noise and disturbance from the Project. These impacts would temporarily reduce the available habitat area for large mammals. Additionally, sumps associated with drill sites would be built with an incline on one end so entrapped animals could easily exit the sump, or fences would be constructed around sumps and other small excavations that would restrict wildlife access.

Amphibians and Reptiles

Amphibians are not present within the Project Area. Reptiles would be impacted by surface disturbing activities, which would remove vegetation and disturb soil. Surface disturbance would remove potential areas for the sagebrush lizard and western fence lizard to lay their eggs or could destroy eggs laid within disturbance areas. Loss of vegetative cover and burrows could result in greater mortality due to predators. Temporary disturbance would reduce the foraging area. Impacts would be temporary, and vegetation would be restored subsequent to reclamation.

3.3 Effects of the No Action Alternative

Under the No Action Alternative, none of the impacts associated with the Proposed Action would occur. However, NUG would continue mineral exploration activities and create up to five acres of surface disturbance under Notice NVN-089695 in the Project Area.

3.3.1 Air Quality

Under the No Action Alternative, Notice-level exploration activities under Notice NVN-089695 would continue and include surface disturbance of up to five acres on public land. NUG would control dust by minimizing surface disturbance and observing prudent speed limits. Under the No Action Alternative, dust would be generated by travel on dirt roads and emissions would be generated from drill rigs, support equipment, and vehicles during exploration activities. These emissions would cause minimal impacts to air quality. The reclamation of surface disturbance would gradually eliminate long-term impacts to air quality from wind erosion of disturbed soils. Under the No Action Alternative, impacts would be similar but proportionally less than under the Proposed Action, as there would be approximately 95 fewer acres of new surface disturbance under the No Action Alternative.

3.3.2 Cultural Resources

Under the No Action Alternative, there would be no impacts to significant cultural resources because they would be avoided. Therefore, impacts under the No Action Alternative would be the same as under the Proposed Action.

3.3.3 Fire Management

Under the No Action Alternative, no impacts to fire management would occur, as there are no active fuel treatment areas within the existing Project Area boundary. Therefore, impacts under the No Action Alternative would be the same as under the Proposed Action.

3.3.4 Forestry and Woodland Resources

Under the No Action Alternative, up to five acres of surface disturbance would continue within the Project Area under Notice-level exploration activities, which would not impact forest resources. Piñon-juniper trees removed as part of the greater sage-grouse EPM would not be available for personnel or commercial use under a deadwood permit.

3.3.5 Geology and Minerals

Under the No Action Alternative, exploration drilling would be conducted, which would only result in the removal of small amounts of rock from the borings. Fewer holes would be drilled under the No Action Alternative, so impacts to geology and minerals would be similar, but proportionally less than impacts associated with the Proposed Action.

3.3.6 Migratory Birds

Under the No Action Alternative, up to five acres of surface disturbance would continue within the Project Area under Notice-level exploration activities. This could result in the temporary loss of approximately five acres of migratory bird nesting or foraging habitat. Reclamation of surface disturbance would gradually eliminate potential impacts to migratory birds. Impacts to migratory birds under the No Action Alternative would be similar, but proportionally less than the Proposed Action (approximately five acres of surface disturbing activities versus approximately 100 acres associated with the Proposed Action).

3.3.7 Native American Religious Concerns

Under the No Action Alternative, NUG would continue their Notice-level surface mineral exploration activities. The BLM MLFO has continual consultation with the local Tribes regarding ongoing and proposed projects and land management activities. No concerns pertaining to the existing Notice-level exploration activities have been brought to the BLM's attention; therefore, at this time there would be no impacts to Native American Religious Concerns under the No Action Alternative.

3.3.8 Noxious Weeds, Invasive, and Non-native Species

Under the No Action Alternative, up to five acres of surface disturbance would continue within the Project Area under Notice-level exploration activities. Impacts associated with the No Action Alternative could result in the establishment of noxious weeds, invasive, and non-native species. Reclamation of surface disturbance, including reseeding, associated with Notice-level exploration activities, would gradually decrease potential impacts of noxious weeds, invasive, and non-native species.

The No Action Alternative would not implement the greater sage-grouse EPM, which may provide an increased risk for invasion of noxious weeds, invasive and non-native species. High levels of tree dominance would greatly reduce the diversity of perennial vegetation needed for resiliency following disturbance. High levels of tree dominance could also eventually result in larger, more intense wildfires, followed by the gradual invasion of noxious weeds, invasive and non-native species and displacement of native vegetation communities.

3.3.9 Rangeland Management/Livestock Grazing

Under the No Action Alternative, up to five acres of surface disturbance would continue within the Project Area under Notice-level exploration activities. Impacts to rangeland management under the No Action Alternative would be similar, but proportionally less than the Proposed Action (a loss of approximately zero AUM under the No Action Alternative versus a loss of approximately eight AUMs associated with the Proposed Action).

The No Action alternative would not implement the greater sage-grouse EPM, and as a consequence, over time, increasing domination of plant communities by piñon-juniper would reduce, and eventually eliminate, livestock forage from portions of the proposed Project Area.

3.3.10 Recreation

Under the No Action Alternative, ongoing mineral exploration activities currently permitted in the Project Area consist of surface drilling activities. The same recreational activities that would occur under the Proposed Action would continue to occur under the No Action Alternative. Impacts would be similar under the No Action Alternative as under the Proposed Action, as all roads would remain open and there would be no fencing of the Project Area to preclude use, except for fences around the sumps for safety purposes.

3.3.11 Social Values and Economics

Under the No Action Alternative, ongoing mineral exploration activities currently permitted in the Project Area consist of surface drilling activities. This type of exploration requires a smaller work force and is more intermittent in nature. The No Action Alternative would result in beneficial impacts to the local economies, as the workers would obtain lodging, meals, and supplies in these local communities. However, under the No Action Alternative, impacts to public services and housing would be less than under the Proposed Action, as there would be approximately four employees needing services in impacted communities compared to eight employees under Phase I of the Proposed Action.

3.3.12 Soils

Under the No Action Alternative, up to five acres of surface disturbance would continue within the Project Area under Notice-level exploration activities. The potential for wind and water erosion of disturbed soils would be similar but proportionally less than the Proposed Action (approximately five acres of disturbed soils versus 100 acres associated with the Proposed Action).

Under the No Action Alternative, increasing distribution and densification of piñon-juniper expansion woodlands can be expected, along with the diminishing plant diversity, and accelerated soil erosion. Piñon-juniper-induced reductions in understory vegetation can negatively affect hydrology to such an extent that even frequent small thunderstorms can generate runoff and soil erosion (Pierson et al. 2007; Petersen and Stringham 2008; Petersen et al. 2009; Cline et al. 2010; Pierson et al. 2010).

3.3.13 Special Status Species

Under the No Action Alternative, up to five acres of surface disturbance would continue within the Project Area under Notice-level exploration activities. Impacts to special status species and their habitat under the No Action Alternative would be similar to but proportionally less than the Proposed Action (approximately five acres of surface disturbing activities versus approximately 100 acres associated with the Proposed Action).

Piñon-juniper treatment associated with the Proposed Action would not occur and piñon-juniper encroachment would continue within the Project Area. If left untreated, this encroachment would eventually result in the loss of high quality wildlife habitat through competitive exclusion of grasses, shrubs, forbs and other tree species such as quaking aspen and curleaf mountain mahogany. Moreover, greater sage-grouse generally shun piñon-juniper woodlands even before exclusion of other plant species occurs (Braun 1998). Studies in Colorado report avoidance of piñon-juniper throughout the year and especially during breeding and summer periods (Commons et al. 1999). Even obligate inhabitants of piñon-juniper woodlands such as the juniper titmouse and pinyon jay would decline in numbers as these woodlands approach higher densities.

3.3.14 Vegetation

Under the No Action Alternative, up to five acres of surface disturbance would continue within the Project Area under Notice-level exploration activities. Reclamation of surface disturbance,

including reseeded, associated with Notice-level exploration activities, would minimize impacts to vegetation. Under the No Action Alternative, impacts would be similar to but proportionally less than the Proposed Action (approximately five acres of surface disturbing activities versus approximately 100 acres associated with the Proposed Action).

Under the No Action Alternative, increasing distribution and densification of piñon-juniper expansion woodlands can be expected, along with the diminishing plant diversity, and accelerated soil erosion. Piñon-juniper-induced reductions in understory vegetation can negatively affect hydrology to such an extent that even frequent small thunderstorms can generate runoff and soil erosion (Pierson et al. 2007; Petersen and Stringham 2008; Petersen et al. 2009; Cline et al. 2010; Pierson et al. 2010).

3.3.15 Visual Resources

Under the No Action Alternative, no facilities or structures would be constructed and reclamation of the temporary disturbance from drill pads and roads would occur shortly after disturbance. The Project Area has previously been disturbed and altered from past mineral exploration activities, however, the impact caused by the No Action alternative to the existing environment would be less than the impacts created by the Proposed Action. The No Action Alternative would also meet Class IV management objectives.

Visual resources would not immediately change from current condition if the proposed Project is not implemented. However, over time, in areas that may have implemented the greater sage-grouse EPM, piñon-juniper domination would degrade the visual variety of the area. Opportunities for wildlife viewing would be diminished as both visibility and the quality of the habitat (which would support less wildlife) decline.

3.3.16 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 only involves surface exploration drilling and does not include the storage of hazardous or regulated materials. The source of spills or leaks would be from the drill rigs operating at the site. Therefore, the No Action Alternative has less potential for spills because the scale of activities is less than the Proposed Action.

3.3.17 Water Quality

Under the No Action Alternative, up to five acres of surface disturbance would continue within the Project Area under Notice-level exploration activities. With the use of BMPs to prevent erosion and sediment transport, impacts to water quality would not be anticipated. Should the drill holes encounter ground water, the holes would be plugged in accordance with NAC 534.420.

3.3.18 Wild Horses

Under the No Action Alternative, up to five acres of surface disturbance would continue within the Project Area under Notice-level exploration activities. NUG would place fences around drill

sumps, limiting impacts to wild horses. Additionally, sumps associated with drill sites would be built with an incline on one end so entrapped animals could easily exit the sump. Impacts to wild horses could be caused by surface disturbing activities on approximately five acres within the Project Area; however, water sources would not be impacted and it is expected wild horses would avoid drill sites during drilling operations. Water is available in areas within the HMA adjacent to the Project Area. Impacts to wild horses under the No Action Alternative would be similar to, but less than the impacts associated with the Proposed Action.

Under the No Action Alternative, which would not implement the greater sage-grouse EPM, piñon-juniper encroachment and dominance within portions of the Project Area would continue, and Cadet Trough Spring would remain in disrepair. Habitat improvements that could be realized through piñon-juniper thinning, and restoration of the Cadet Trough Spring water development would not occur.

3.3.19 Wildlife

Under the No Action Alternative, up to five acres of surface disturbance would continue within the Project Area under Notice-level exploration activities. Reclamation of existing surface disturbance would gradually eliminate impacts to wildlife. Impacts to wildlife under the No Action Alternative would be similar, but proportionally less than the Proposed Action (approximately five acres of surface disturbing activities versus approximately 100 acres associated with the Proposed Action).

Piñon-juniper treatment associated with the proposed action would not occur and piñon-juniper encroachment would continue within the project area. If left untreated, this encroachment would eventually result in the loss of high quality wildlife habitat through competitive exclusion of grasses, shrubs, forbs and other tree species such as quaking aspen and curlleaf mountain mahogany. Moreover, sage-grouse generally shun piñon-juniper woodlands even before exclusion of other plant species occurs (Braun 1998). Studies in Colorado report avoidance of piñon-juniper throughout the year and especially during breeding and summer periods (Commons et al. 1999). Even obligate inhabitants of piñon-juniper woodlands such as the juniper titmouse and pinyon jay would decline in numbers as these woodlands approach higher densities.

4 CUMULATIVE IMPACT ANALYSIS

4.1 Introduction

For the purpose of this EA, the cumulative impacts are the sum of all past, present, 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 individual minor but collectively significant actions taken place over a period of time" (40 CFR 1508.7).

As required under the NEPA and the regulations implementing the NEPA, this chapter addresses those cumulative effects on the environmental resources in the Cumulative Effects Study Areas (CESAs) that could result from the implementation of the Proposed Action and reasonable alternatives, past actions, present actions, and RFFAs. The extent of the CESAs vary by each resource, based on the geographic or biological 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 varies 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 evaluated in this chapter.

Step 2: Define timeframes, scenarios, acreage, and activity estimates for cumulative impact analysis.

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

4.2 Cumulative Effects Study Areas

Environmental consequences of the Proposed Action were previously evaluated in Chapter 3 for the various environmental resources. Discussed in the following sections are the resources that have the potential to be cumulatively impacted by the Proposed Action within the identified CESA. The discussions are based upon the previous analysis in Chapter 3 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: Air Quality; Fire Management; Geology and Minerals; Native American Religious Concerns; Paleontological Resources; Rangeland Management; Recreation; Social Values and Economics; Special Status Plant Species; Visual Resources; Wastes (hazardous and solid); and Water Quality. These resources are not further discussed in the cumulative impacts section.

The following eight elements or resources have been brought forward for cumulative impact analysis: Cultural Resources; Migratory Birds; Noxious Weeds, Invasive, and Non-native Species; Soils; Special Status Wildlife Species; Vegetation; Wild Horses; and Wildlife (General). The geographic areas considered for further 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 3.

The Cultural Resources CESA is comprised of the southern portion of the Pine Valley Hydrographic Basin. This CESA boundary is used to analyze cumulative impacts to Cultural Resources.

The Social Values and Economics CESA is comprised of Eureka County. This CESA is used to analyze cumulative impacts to social values and economics.

The Vegetation CESA is comprised of the JD Grazing Allotment boundary. This CESA boundary is used to analyze cumulative impacts from noxious weeds, invasive, and non-native species, to soils, and to vegetation.

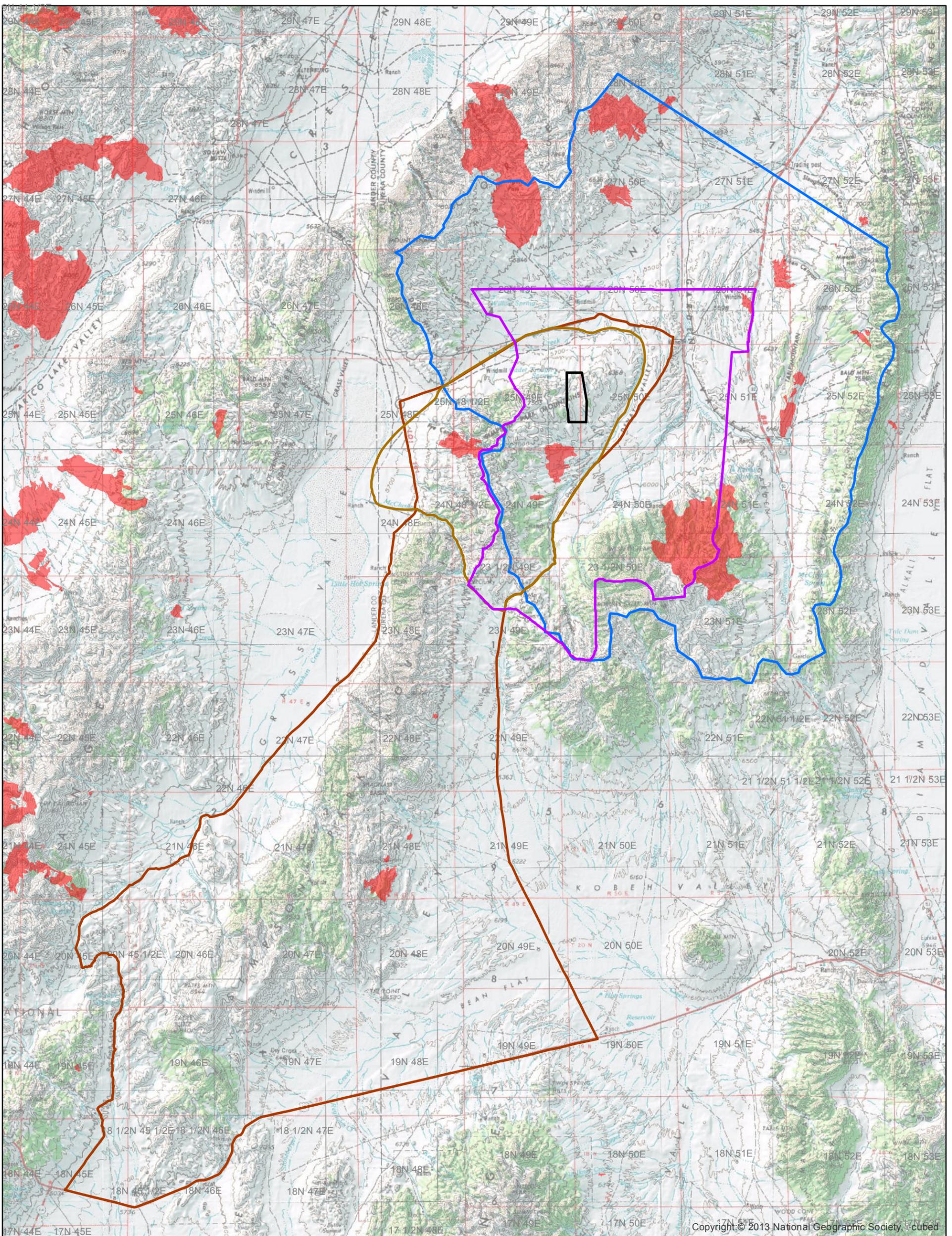
The Wild Horses CESA is comprised of the Rocky Hills HMA. This CESA boundary is used to analyze cumulative impacts to wild horses.

The Wildlife CESA is comprised of NDOW Hunt Unit 155. This CESA boundary is used to analyze cumulative impacts to Migratory Birds, Special Status Wildlife Species, and Wildlife (General).

Table 4.2-1 describes each CESA area by resource. Figure 4.2.1 shows the CESA boundaries.

Table 4.2-1: Cumulative Effects Study Areas

Resources Analyzed	CESA	Description of CESA	Size of CESA (acres)
Cultural Resources	Cultural Resources CESA	Southern portion of Pine Valley Hydrographic Basin	388,152
Noxious Weeds, Invasive and Non-native Species; Soils; Vegetation	Vegetation CESA	JD Grazing Allotment	145,939
Wild Horses	Wild Horses CESA	Rocky Hills HMA	83,988
Migratory Birds; Special Status Wildlife Species; and Wildlife (General)	Wildlife CESA	NDOW Hunt Unit 155	432,410



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Explanation

- Project Area
- Cultural CESA
- Vegetation CESA
- Wild Horses CESA
- Wildlife CESA
- Fire History (2000-2013)

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 Mount Lewis Field Office
 50 Bastian Road
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Cumulative Effects Study Areas

Figure 4.2.1

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4.2.1 Past, Present, and Reasonably Foreseeable Future Actions

4.2.1.1 Past and Present Actions

Past and present actions in the four CESAs include the following: livestock grazing; wildland fires; wildlife habitat management; utility and other ROW construction and maintenance; mineral exploration (including approved surface exploration within the Project Area) and mining; wild horse gathers and fertility control treatment; and dispersed recreation.

Livestock Grazing

Portions of 11 allotments are located within the Cultural Resources CESA, portions of three allotments are located in the Wild Horses CESA, and portions of eight allotments are located in the Wildlife CESA. The JD Allotment comprises the entire Vegetation CESA. The allotments located in each of the CESAs are listed in Table 4.2-2.

Table 4.2-2: Allotments Located Within the CESAs

Grazing Allotment Name	CESA			
	Cultural Resources	Vegetation	Wild Horses	Wildlife
Dry Creek				X
Flynn/Parman	X			
Grass Valley	X		X	X
JD	X	X	X	X
Mineral Hill	X			
North Diamond	X			
Pine Creek	X			
Roberts Mountain	X			
Romano	X			
Santa Fe/Ferguson				X
Simpson Park				X
South Buckhorn	X			
Three Bars	X		X	X
Underwood				X
Union Mountain	X			
Willow Ranch				X

Table 4.2-3 includes the rangeland improvements located within the Cultural Resources, Vegetation, Wild Horse, and Wildlife CESAs.

Table 4.2-3: Rangeland Improvements Located Within the CESAs

CESA	Rangeland Improvement Type
Cultural Resources	Branding trap (1), cattle guards (15), corrals (8), exclosures (5), flowing well (1), non-flowing wells (2), pipelines (3), pond (1), reservoirs (2), springs (3), spring developments (7), spring/trough (2), troughs (9), wells (8), windmill (1), allotment fences (56.4 miles), drift fences (6.2 miles), exclosure fences (9.5 miles), gap fences (1.2 miles), ownership fences (22.2 miles), pasture fences (196.2 miles), protection fences (10.4 miles), temporary fence (6.1 miles), water pipeline (3.4 miles), other fences (14.4 miles)

CESA	Rangeland Improvement Type
Vegetation	Cattle guards (7), corrals (4), spring developments (3), troughs (2), wells (3), allotment fences (34.5 miles), drift fences (0.2 mile), exclosure fences (4.8 miles), gap fence (0.9 mile), ownership fences (10.5 miles), pasture fences (69.5 miles), protection fences (8.1 miles)
Wild Horse	Cattle guards (2), corrals (4), spring developments (7), trough (1), water drops (7), well (1), windmill (1), allotment fences (6.3 miles), drift fence (1.2 miles), exclosure fences (3.7 miles), ownership fences (6.6 miles), pasture fences (17 miles), protection fences (4.2 miles)
Wildlife	Cattle guards (11), corrals (9), spring developments (33), stock pond (1), storage tanks (2), troughs (8), water drops (7), wells (12), well/troughs (2), windmills (7), allotment fences (105.3 miles), drift fence (1.2 miles), exclosure fences (20.5 miles), ownership fences (18.8 miles), pasture fences (136.3 miles), protection fences (8.2 miles)

Wildland Fires

Although there are no recorded wildland fires within the Project Area, there has been wildland fire disturbance within all four CESAs. The wildland fire disturbance in the CESAs is shown on Figure 4.2.1. Between 2000 and 2013, there were approximately 24,680 acres of wildland fire disturbance in the Cultural Resources CESA, approximately 9,076 acres of wildland fire disturbance in the Vegetation CESA, approximately 2,638 acres of wildland fire disturbance in the Wild Horses CESA, and approximately 3,789 acres of wildland fire disturbance in the Wildlife CESA.

Vegetation treatments within the Vegetation CESA include the following: approximately 2,804 acres of aerial seeding; approximately 362 acres of chaining; approximately 1,763 acres of chemical treatments; approximately 4,427 acres of drill seeding; approximately 2,244 acres of hand thinning; and approximately 17,391 acres with multiple treatment types. Vegetation treatments within the Wild Horses CESA include the following: approximately 2,647 acres of aerial seeding; approximately 230 acres of chaining; approximately 780 acres of drill seeding; and approximately 38,691 acres with multiple treatments. Vegetation treatments within the Wildlife CESA include the following: approximately 2,902 acres of aerial seeding; approximately 554 acres of chaining; approximately 7,401 acres of drill seeding; and approximately 86,764 acres with multiple treatments.

Wildlife Habitat Management/Restoration/Hazardous Fuel Treatment

Research and management of big game and wildlife are undertaken by the NDOW and the BLM and may include modification to existing habitat and rangeland facilities. The Wildlife CESA, or NDOW Hunt Unit 155, contains portions of the Dry Creek, Grass Valley, JD, Santa Fe/Ferguson, Simpson Park, Three Bars, Underwood, and Willow Ranch allotments.

Rights-of-Way

The BLM’s Land & Mineral Legacy Rehost 2000 System (LR2000) database was used to query the various types of ROWs that have been authorized or constructed within the CESAs by section, Township, and Range, and includes the following: roads and highways; telecommunications; power transmission facilities; communication sites; irrigation and water

facilities; wind energy facilities; and other ROWs. The exact 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 June 6, 2014, for the Cultural Resources, Vegetation, and Wild Horses CESAs, and June 9, 2014, for the Wildlife CESA. Any newly approved ROWs that have been added to the LR2000 database after these dates are not included in the analysis. The approximate total acreages of existing and approved ROWs within each CESA are listed in Table 4.2-4.

Table 4.2-4 Past and Present Rights-of-Way Acres in the CESAs

ROW Type	Cultural Resources CESA (acres)	Vegetation CESA (acres)	Wild Horses CESA (acres)	Wildlife CESA (acres)
Roads and Highways	1,453	50	70	2,569
Telecommunications	226	192	7	889
Power Transmission	3,316	3,316	308	6,218
Communication Sites	0	0	0	6
Irrigation/Water Facilities and Pipelines	28	28	28	76
Wind Energy Facilities	0	0	0	5,580
Other	0	0	0	402
Total	5,023	3,586	413	15,740

Mineral Exploration and Mining

The LR2000 database was queried by Section, Township, and Range to show the past and present mineral exploration or mining activities (i.e., authorized and closed Notices, authorized and closed plans of operation, and mineral material disposal sites) that have been issued within the four CESAs. Past and present mineral exploration and mining activities in the four CESAs include historic and current mineral exploration and mining operations. Table 4.2-5 shows the results of the LR2000 query, in acres, of the exploration and mining activities within each CESA. The LR2000 database was queried on June 6, 2014, for the Cultural Resources, Vegetation, and Wild Horses CESAs, and June 9, 2014, for the Wildlife CESA. Any newly authorized Notices or plans of operation added to the LR2000 database after this date are not included in the analysis. The largest existing mining project located in the CESAs, specifically within the Cultural Resources CESA, is the Mount Hope Molybdenum Mine, which includes approximately 8,306.7 acres.

Table 4.2-5: Past and Present Minerals Disturbance Acres in the CESAs

CESA	Authorization Status	Total Acres of Disturbance
Cultural Resources CESA	Authorized and Closed Notices	421
	Authorized and Closed Plans of Operations	12,375
	Mineral Material Disposal Sites	546
	Cultural Resources CESA Total	13,342
Vegetation CESA	Authorized and Closed Notices	227
	Authorized and Closed Plans of Operations	2,017
	Mineral Material Disposal Sites	300
	Vegetation CESA Total	2,544
Wild Horses CESA	Authorized and Closed Notices	162
	Authorized and Closed Plans of Operations	1,184
	Mineral Material Disposal Sites	0
	Wild Horses CESA Total	1,346
Wildlife CESA	Authorized and Closed Notices	289
	Authorized and Closed Plans of Operations	1,206
	Mineral Material Disposal Sites	462
	Wildlife CESA Total	1,957

Dispersed Recreation

Historical and present recreational activities that have occurred and are occurring within the CESAs include primarily dispersed recreation activities such as the following: motorcycle and OHV riding, horseback riding, pack trips, mountain bicycling, camping, driving for pleasure, hiking, hunting, rockhounding, photography, rock climbing, nature study, wildlife/wild horse/burro viewing, picnicking, cross country skiing, snowmobiling, and four wheel driving.

4.2.1.2 Reasonably Foreseeable Future Actions

RFFAs in the Cultural Resources CESA include livestock grazing, wildland fires, wildlife and game habitat management, ROW construction and maintenance, mineral exploration, and dispersed recreation.

RFFAs in the Vegetation CESA include livestock grazing, wildland fires, vegetation treatments including piñon-juniper thinning as a result of the greater sage-grouse EPM associated with the

Proposed Action, wildlife and game habitat management, mineral exploration, and dispersed recreation.

RFFAs in the Wild Horses CESA include livestock grazing, wildland fires, vegetation treatments including piñon-juniper thinning as a result of the greater sage-grouse EPM associated with the Proposed Action, wildlife and game habitat management, mineral exploration, and dispersed recreation.

RFFAs in the Wildlife CESA include livestock grazing, wildland fires, vegetation treatments including piñon-juniper thinning as a result of the greater sage-grouse EPM associated with the Proposed Action, wildlife and game habitat management, mineral exploration, and dispersed recreation.

The Project Area and portions of all four CESAs are within the boundary of the proposed 3 Bars Ecosystem and Landscape and Restoration Project (3 Bars). The 3 Bars preferred alternative includes treating approximately 127,000 acres to control noxious weeds and other invasive species, primarily by using manual and mechanical methods, fire (prescribed and wildland), and biological controls (use of livestock and classic biological controls including nematodes, fungi, mites, and insects) (BLM 2013b).

4.3 Evaluation of Potential Cumulative Impacts

4.3.1 Cultural Resources

The CESA for cultural resources is the Cultural Resources CESA. This CESA encompasses approximately 388,152 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting cultural resources include livestock grazing, wildland fires, wildlife and game habitat management, ROW construction and maintenance, mineral exploration, mining, and dispersed recreation. Some past mining operations have become cultural sites, which increases the number of cultural resources.

Historic fires (2000-2013) have burned approximately 24,680 acres in the Cultural Resources CESA (approximately six percent of the CESA). Authorized and closed mineral exploration and mining Notices and plans of operation, as well as mineral material disposal sites, total approximately 13,342 acres (approximately three percent of the CESA) of surface disturbance. Approximately 5,023 acres of ROWs were issued within the Cultural Resources CESA that had the potential to create surface disturbance that would impact cultural resources.

RFFAs: Potential impacts to cultural resources from livestock grazing, wildlife and game habitat management, ROW construction and maintenance, mineral exploration activities, dispersed recreation, and wildland fires are expected to continue. There are no specific data to quantify impacts to cultural resources within the CESA as a result of dispersed recreation, livestock grazing, wildlife and game habitat management, or potential wildland fires. There are approximately 61 acres of pending ROW projects reported in LR2000 in the Cultural Resources CESA. There are approximately 207 acres of pending minerals projects, which includes the

proposed Project. All pending minerals projects are required to incorporate protection measures for cultural resources and therefore, are not expected to directly impact cultural resources.

4.3.1.1 Proposed Action

The Proposed Action (approximately 100 acres) would impact approximately 0.03 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Cultural Resources CESA total approximately 43,313 acres, which results in an incremental impact from the Proposed Action of approximately 0.2 percent. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. Project-related impacts would be localized and minimized due to implementation of the EPMs outlined in Section 2.1.9. Therefore, based on the above analysis and findings, incremental impacts to cultural resources as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minimal.

4.3.1.2 No Action Alternative

The total of the quantifiable past and present actions and RFFA disturbance within the Cultural Resources CESA is approximately 43,313 acres, which is an impact to approximately 11 percent of the CESA. This alternative (approximately five acres) would result in an incremental impact of approximately 0.01 percent. Impacts to cultural resources from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

4.3.2 **Migratory Birds**

The CESA for migratory birds is the Wildlife CESA. This CESA encompasses approximately 432,410 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting migratory birds and their habitat include livestock grazing, wildland fires, vegetation treatments, wildlife and game habitat management, ROW construction and maintenance, mineral exploration, mining, and dispersed recreation. Impacts to migratory birds and their habitat have resulted from the following: 1) indirect impacts from the destruction of habitat associated with building roads and clearing vegetation; 2) indirect impacts from the disruption from human presence or noise from drill rigs, water trucks, and 4WD pickups; and 3) direct impacts or harm to migratory birds that result from the removal of trees and shrubs containing viable nests or ground nests destroyed by construction or ranching equipment. There are no specific data that quantify impacts to migratory birds and their habitat as a result of livestock grazing or recreation. Impacts to migratory birds from livestock grazing include trampling of vegetation or nesting areas near streams, springs, or riparian areas within the Wildlife CESA. Impacts to migratory birds and their habitat from recreation activities include destruction of native vegetation or nesting areas from off-road vehicles that traveled off of established roadways.

Historic fires (2000–2013) have burned approximately 3,789 acres in the Wildlife CESA (approximately 0.9 percent of the CESA). Authorized and closed mineral exploration and mining Notices and plans of operation, as well as mineral material disposal sites, total approximately

1,957 acres (approximately 0.4 percent of the CESA) of surface disturbance. Approximately 15,740 acres of ROWs were issued within the Wildlife CESA that had the potential to create surface disturbance and disturb migratory bird habitat and vegetation. There were also approximately 97,621 acres of vegetation treatments that occurred within the Wildlife CESA. The CESA is also comprised of NDOW Hunt Unit 155, which had the potential to create noise and disturbance to migratory birds, or remove or alter habitat. The Wildlife CESA encompasses portions of the Dry Creek, Grass Valley, JD, Santa Fe/Ferguson, Simpson Park, Three Bars, Underwood, and Willow Ranch grazing allotments. Livestock grazing and associated management could have contributed to the establishment and spread of noxious weeds, invasive and non-native species, which could have had an indirect effect on migratory birds and their habitat. 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 approximately 28 percent of the CESA. 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.

RFFAs: Potential impacts to migratory birds and their habitat from livestock grazing, wildlife and game habitat management, ROW construction and maintenance, mineral exploration activities, dispersed recreation, vegetation treatments including piñon-juniper thinning as a result of the greater sage-grouse EPM associated with the Proposed Action, or loss of native vegetation associated with potential wildland fires are expected to continue. There are no specific data to quantify impacts to migratory birds or their habitat within the CESA as a result of dispersed recreation, livestock grazing, wildlife and game habitat management, vegetation treatments, or potential wildland fires. There would be up to 300 acres of piñon-juniper thinning activities in the Wildlife CESA. There are no pending ROW projects reported in LR2000 in the Wildlife CESA. There are approximately 800 acres of pending minerals projects, which includes the proposed Project. All pending minerals projects are required to incorporate protection measures for migratory birds and therefore, are not expected to directly harm migratory birds, but may result in habitat removal or alteration.

4.3.2.1 Proposed Action

The Proposed Action (approximately 100 acres of temporary nesting and/or foraging habitat removal) would impact approximately 0.02 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Wildlife CESA total approximately 120,207 acres, which results in an incremental impact from the Proposed Action of approximately 0.08 percent. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. Project-related impacts would be localized and minimized due to implementation of the EPM outlined in Section 2.1.9 and concurrent reclamation. Therefore, based on the above analysis and findings, incremental impacts to migratory birds and their habitat as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minimal.

4.3.2.2 No Action Alternative

A total of the quantifiable past and present actions and RFFA disturbance within the Wildlife CESA is approximately 120,207 acres, which is an impact to approximately 28 percent of the CESA. This alternative (approximately five acres) would result in an incremental impact of approximately 0.004 percent. Impacts to migratory birds and their habitat from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

4.3.3 **Noxious Weeds, Invasive and Non-native Species**

The CESA for noxious weeds, invasive and non-native species is the Vegetation CESA. This CESA encompasses approximately 145,939 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions with impacts created from noxious weeds, invasive, and non-native species could have included and may currently include livestock grazing, wildland fires, vegetation treatments, wildlife and game habitat management, ROW construction and maintenance, mineral exploration, mining, and dispersed recreation. These actions could have disturbed vegetation and soils creating an opportunity for invasive plant colonization and the introduction of noxious weed, invasive or non-native species seeds. There are no specific data to quantify impacts from noxious weeds, invasive and non-native species that resulted from wildlife and game habitat management, livestock grazing, or dispersed recreation.

Historic fires (2000–2013) have burned approximately 9,076 acres in the Vegetation CESA (approximately six percent of the CESA). Authorized and closed mineral exploration and mining Notices and plans of operation, as well as mineral material disposal sites, total approximately 2,544 acres (approximately two percent of the CESA) of surface disturbance. Approximately 3,586 acres of ROWs were issued within the Vegetation CESA that had the potential to introduce noxious weeds, invasive and non-native species. There were also approximately 28,991 acres of vegetation treatments that occurred within the Vegetation CESA. The past and present actions that are quantifiable have disturbed approximately 30 percent of the CESA.

RFFAs: Potential impacts from noxious weeds, invasive and non-native species as a result of livestock grazing, wildlife and game habitat management, dispersed recreation, ROW construction and maintenance, mineral exploration activities, vegetation treatments including piñon-juniper thinning as a result of the greater sage-grouse EPM associated with the Proposed Action, or loss of native vegetation associated with potential wildland fires are expected to continue. There are no specific data to quantify impacts from noxious weeds, invasive and non-native species as a result of dispersed recreation, livestock grazing, wildlife and game habitat management, vegetation treatments, or potential wildland fires. There are approximately 200 acres of disturbance from pending minerals projects in the Vegetation CESA including the proposed Project, and no pending ROW projects. There would be up to 300 acres of piñon-juniper thinning activities in the Vegetation CESA.

4.3.3.1 Proposed Action

The Proposed Action (approximately 100 acres) would impact approximately 0.07 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Vegetation CESA is

approximately 44,497 acres, which results in an incremental impact from the Proposed Action of approximately 0.2 percent. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. Project-related impacts would be minimized due to implementation of the EPM outlined in Section 2.1.9 and concurrent reclamation. Therefore, based on the above analysis and findings, incremental impacts from noxious weeds, invasive, and non-native species as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minimal.

4.3.3.2 No Action Alternative

A total of the quantifiable past and present actions and RFFA disturbance within the Vegetation CESA is approximately 44,497 acres, which is an impact to approximately 31 percent of the CESA. This alternative (approximately five acres) would result in an incremental impact of approximately 0.01 percent. Impacts from noxious weeds, invasive, and non-native species from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

4.3.4 Social Values and Economics

The CESA for social values and economics is the Social Values and Economics CESA, or Eureka County, which encompasses approximately 2,668,551 acres.

Past and Present Actions: Past and present actions within the Social Values and Economics CESA include the following: grazing and agriculture; utilities and infrastructure; wildland fires; recreation; mining; and mineral development and exploration. Impacts to social values and economics from these activities include increased population, increased demand for public services, increased employment opportunities, increased revenues within the CESA, and increased expenditures by the communities within the CESA. The extent of these impacts vary with the type of activity and have not been quantified; however, the majority of these impacts from past and present activities do not have any ongoing impacts and are considered to be part of the existing social and economic climate within the CESA.

RFFAs: Social values and economic impacts would result from the following RFFAs: grazing and agriculture; utilities and infrastructure; wildland fires; recreation; mining; and mineral development and exploration.

4.3.4.1 Proposed Action

As outlined in Section 3.2.11.2, the Proposed Action does not induce substantial growth or concentration of population, displace a large number of people, cause a substantial reduction in employment, reduce wage and salary earnings, cause a substantial net increase in county expenditures, or create a substantial demand for public services. In the volatile economy of the foreseeable future, it is expected that the cumulative and incremental social values and economics effects of the Proposed Action would be beneficial and not significant.

4.3.4.2 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be approved and ongoing mineral exploration activities in the Project Area would continue. The cumulative impacts resulting from the No Action Alternative would be less than those associated with the Proposed Action because the authorized operations would result in the need for fewer employees than the Proposed Action.

4.3.5 Soils

The CESA for soils is the Vegetation CESA. This CESA encompasses approximately 145,939 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting soils include livestock grazing, wildland fires, vegetation treatments, wildlife and game habitat management, ROW construction and maintenance, mineral exploration, mining, soil compaction due to travel by heavy equipment on unpaved roads, and dispersed recreation. These actions may have directly disturbed or impacted soils, or increased erosion or sedimentation potential. Soil disturbance has also been associated with wildland fires; however, fire rehabilitation and natural revegetation has 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 to quantify impacts to soils from livestock grazing, wildlife and game habitat management, or dispersed recreation in the Vegetation CESA.

Historic fires (2000–2013) have burned approximately 9,076 acres in the Vegetation CESA (approximately six percent of the CESA). Authorized and closed mineral exploration and mining Notices and plans of operation, as well as mineral material disposal sites, total approximately 2,544 acres (approximately two percent of the CESA) of surface disturbance. Approximately 3,586 acres of ROWs were issued within the Vegetation CESA that had the potential to create surface disturbance. There are also ongoing revegetation treatments in the Vegetation CESA that total approximately 28,991 acres. The quantifiable past and present actions have disturbed approximately 30 percent of the CESA.

RFFAs: Potential wildland fires, wildlife and game habitat management, ROW construction and maintenance, mineral exploration, livestock grazing, vegetation treatments including piñon-juniper thinning as a result of the greater sage-grouse EPM associated with the Proposed Action, soil compaction due to travel by heavy equipment on unpaved roads, and dispersed recreation are expected to continue. There are no specific data to quantify impacts to soils as a result of dispersed recreation, livestock grazing, wildlife and game habitat management, vegetation treatments, or potential wildland fires. There are approximately 200 acres of disturbance from pending minerals projects in the Vegetation CESA including the proposed Project, and no pending ROW projects. There would be up to 300 acres of piñon-juniper thinning activities in the Wildlife CESA.

4.3.5.1 Proposed Action

The Proposed Action (approximately 100 acres) would impact approximately 0.07 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Vegetation CESA is approximately 44,697 acres, which results in an incremental impact from the Proposed Action of approximately 0.2 percent. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. Project-related impacts would be localized and minimized due to implementation of the EPMs outlined in Section 2.1.9 and concurrent reclamation. Therefore, based on the above analysis and findings, incremental impacts to soils as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs and with the implementation of the BMPs and EPMs, are expected to be minimal.

4.3.5.2 No Action Alternative

A total of the quantifiable past and present actions and RFFA disturbance within the Vegetation CESA is approximately 44,697 acres, which is an impact to approximately 31 percent of the CESA. This alternative (approximately five acres) would result in an incremental impact of approximately 0.01 percent. Impacts to soils from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

4.3.6 **Special Status Species**

The CESA for special status wildlife species is the Wildlife CESA. This CESA encompasses approximately 432,410 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions that could have impacted and may be currently be impacting special status wildlife species and their habitat include livestock grazing, wildland fires, vegetation treatments, wildlife and game habitat management, ROW construction and maintenance, mineral exploration, mining, and dispersed recreation. These activities have the potential to impact wildlife habitat, or result in direct impacts to individuals in travel routes, or loss of forage, cover, and habitat, as well as disturbance of mating and brood rearing practices.

Historic fires (2000–2013) have burned approximately 3,789 acres in the Wildlife CESA (approximately 0.9 percent of the CESA). Authorized and closed mineral exploration and mining Notices and plans of operation, as well as mineral material disposal sites, total approximately 1,957 acres (approximately 0.4 percent of the CESA) of surface disturbance. Approximately 15,740 acres of ROWs were issued within the Wildlife CESA that had the potential to create surface disturbance and disturb special status wildlife species and their habitat and vegetation. The CESA is also comprised of the NDOW Hunt Unit 155, which had the potential to create noise and disturbance to special status wildlife species, or remove or alter habitat. There were also approximately 97,621 acres of vegetation treatments that occurred within the Wildlife CESA. The Wildlife CESA encompasses portions of the Dry Creek, Grass Valley, JD, Santa Fe/Ferguson, Simpson Park, Three Bars, Underwood, and Willow Ranch grazing allotments. Livestock grazing and associated management could have contributed to the establishment and spread of noxious weeds, invasive and non-native species, which could have had an indirect effect on special status wildlife species. However, disturbance to special status wildlife species and their habitat 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 approximately 28 percent of the CESA. 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.

RFFAs: Potential impacts to special status wildlife species and their habitat from livestock grazing, wildlife and game habitat management, dispersed recreation, ROW construction and maintenance, mineral exploration activities, vegetation treatments including piñon-juniper thinning as a result of the greater sage-grouse EPM associated with the Proposed Action, or loss of native vegetation associated with potential wildland fires are expected to continue. There are no specific data to quantify impacts to special status wildlife species or their habitat within the CESA as a result of dispersed recreation, livestock grazing, wildlife and game habitat management, vegetation treatments, or potential wildland fires. There would be up to 300 acres of piñon-juniper thinning activities in the Wildlife CESA. There are no pending ROW projects reported in LR2000 in the Wildlife CESA. There are approximately 800 acres of pending minerals projects, which includes the proposed Project.

4.3.6.1 Proposed Action

The Proposed Action (approximately 100 acres of temporary breeding and/or foraging habitat removal) would impact approximately 0.02 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Wildlife CESA is approximately 120,207 acres, which results in an incremental impact from the Proposed Action of approximately 0.08 percent. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. Project-related impacts would be localized and minimized due to implementation of the EPMs outlined in Section 2.1.9 and concurrent reclamation. Therefore, based on the above analysis and findings, incremental impacts to special status wildlife species and their habitat as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs and with the implementation of the BMPs and EPMs, are expected to be minimal and not significant.

4.3.6.2 No Action Alternative

A total of the quantifiable past and present actions and RFFA disturbance within the Wildlife CESA is approximately 120,207 acres, which is an impact to approximately 28 percent of the CESA. This alternative (approximately five acres) would result in an incremental impact of approximately 0.004 percent. Impacts to special status wildlife species and their habitat from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

4.3.7 Vegetation

The CESA for vegetation is the Vegetation CESA. This CESA encompasses approximately 145,939 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting vegetation include livestock grazing, wildland fires, wildlife and game

habitat management, ROW construction and maintenance, mineral exploration, mining, vegetation treatments that altered the structure, composition, and ecology of plant communities, and dispersed recreation. There are no specific data to quantify impacts to vegetation from livestock grazing, wildlife and game habitat management, or dispersed recreation. Impacts caused by hunting activities and associated off-road vehicle travel include the introduction of noxious weeds, invasive or non-native species and trampled vegetation.

Historic fires (2000–2013) have burned approximately 9,076 acres in the Vegetation CESA (approximately six percent of the CESA). Authorized and closed mineral exploration and mining Notices and plans of operation, as well as mineral material disposal sites, total approximately 2,544 acres (approximately two percent of the CESA) of surface disturbance. Approximately 3,586 acres of ROWs were issued within the Vegetation CESA that had the potential to create surface disturbance. There are also ongoing revegetation treatments in the Vegetation CESA which total approximately 28,991 acres. The quantifiable past and present actions have disturbed approximately 30 percent of the CESA.

RFFAs: Potential wildland fires, wildlife and game habitat management, ROW construction and maintenance, mineral exploration, livestock grazing, vegetation treatments including piñon-juniper thinning as a result of the greater sage-grouse EPM associated with the Proposed Action, and dispersed recreation are expected to continue. There are no specific data to quantify impacts to vegetation as a result of dispersed recreation, livestock grazing, wildlife and game habitat management, vegetation treatments, or potential wildland fires. There are approximately 200 acres of disturbance from pending minerals projects in the Vegetation CESA including the proposed Project, and no pending ROW projects. There would be up to 300 acres of piñon-juniper thinning activities in the Vegetation CESA.

4.3.7.1 Proposed Action

The Proposed Action (approximately 100 acres) would impact approximately 0.07 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Vegetation CESA is approximately 44,697 acres, which results in an incremental impact from the Proposed Action of approximately 0.2 percent. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. Project-related impacts would be localized and minimized due to implementation of the EPMs outlined in Section 2.1.9 and concurrent reclamation. Therefore, based on the above analysis and findings, incremental impacts to vegetation as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minimal.

4.3.7.2 No Action Alternative

A total of the quantifiable past and present actions and RFFA disturbance within the Vegetation CESA is approximately 44,697 acres, which is an impact to approximately 31 percent of the CESA. This alternative (approximately five acres) would result in an incremental impact of approximately 0.01 percent. Impacts to vegetation from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

4.3.8 Visual Resources

The Project Area has been explored previously and has obvious existing disturbance that currently affects the line, color, texture, and form of the landscape. With the implementation of applicant-committed EPMs, and concurrent and successful reclamation, the incremental cumulative visual impacts from the Proposed Action, in combination with past and present actions and RFFAs, would be minimal and not significant.

4.3.9 Wild Horses

The CESA for wild horses is the Wild Horses CESA. This CESA encompasses approximately 83,988 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting wild horses include livestock grazing, wildland fires, vegetation treatments, wildlife and game habitat management, ROW construction and maintenance, mineral exploration, mining, wild horse gathers and fertility control treatment, and dispersed recreation. Impacts to wild horses from these activities include loss of forage, human disturbance, and changes to use patterns and distribution within the HMA. The extent of these impacts varies with the type of activity. There are no specific data to quantify impacts to wild horses from livestock grazing, wildlife and game habitat management, and dispersed recreation.

The 1999 Trail Canyon fire burned approximately 47 percent of the CESA. More recent historic fires (2000–2013) have burned approximately 2,638 acres in the Wild Horses CESA (approximately three percent of the CESA). Authorized and closed mineral exploration and mining Notices and plans of operation, as well as mineral material disposal sites, total approximately 1,346 acres (approximately two percent of the CESA) of surface disturbance. Approximately 23.6 acres of surface disturbance is associated with the Patty Exploration Project, located approximately one mile west of the Project Area. Approximately 413 acres of ROWs were issued within the Wild Horses CESA that had the potential to introduce noise and increased traffic from human disturbance activities. There were also approximately 42,348 acres of vegetation treatments that occurred within the Wild Horses CESA. The past and present actions that are quantifiable have disturbed approximately 56 percent of the CESA. These past and present actions have added to the changes in the distribution and use patterns within the CESA, and have increased restless behavior and flight response.

Current behavior by wild horses as documented during monitoring in 2014 indicates that current disturbance in the area from mineral exploration could be affecting wild horse sensitivity to humans as indicated by flight response compared to that observed in past years.

RFFAs: Potential wildland fires, wildlife and game habitat management, ROW construction and maintenance, mineral exploration, livestock grazing, vegetation treatments including piñon-juniper thinning as a result of the greater sage-grouse EPM associated with the Proposed Action, wild horse gathers and population growth suppressant treatments (fertility control), and dispersed recreation are expected to continue. There are no specific data to quantify impacts to wild horses as a result of dispersed recreation, livestock grazing, wildlife and game habitat management, vegetation treatments, or potential wildland fires. There are approximately

202 acres of disturbance from pending minerals projects in the Wild Horses CESA including the proposed Project, and no pending ROW projects. There would be up to 300 acres of piñon-juniper thinning activities in the Wild Horses CESA.

4.3.9.1 Proposed Action

The impacts considered for cumulative analysis were those that result in increased fragmentation of wild horse habitat, and cumulative increases in vegetation and soil disturbances, which result in incremental losses in availability of quality habitat used for wild horses.

Fences restrict free movement within the HMA, and prevent the HMA from being utilized uniformly. When considered with other ongoing and future exploration within the Rocky Hills HMA, the usable habitat may be reduced, and wild horses, at least temporarily, may avoid areas due to human disturbance, particularly in the heavily used areas.

Over time, the areas of disturbance would cumulatively increase, and impact the quality and quantity of habitat available to wild horses, as well as increase risks for erosion and noxious weed invasion. Each activity may result in incremental restrictions to free roaming behavior and over time may influence utilization patterns, genetic interchange and use of water sources.

Through future restoration and fuels reduction projects, it is possible that undesirable habitat infrequently utilized by wild horses could become more appealing due to reduced tree cover and improved understory vegetation. As a result, the changes in use patterns due to increased exploration and human presence could improve distribution by wild horses in the HMA by encouraging them to use the improved habitat areas. Should fences be removed in certain locations, this could further improve animal distribution.

The Proposed Action (approximately 100 acres) would impact soils and vegetation within approximately 0.1 percent of the CESA. Quantifiable past and present actions and RFFA disturbance (to vegetation and soils) in the Wild Horses CESA is approximately 47,247 acres, which results in an incremental impact from the Proposed Action of approximately 0.2 percent. The 1,760-acre Project Area in which the disturbance would occur equates to approximately 2.1 percent of the HMA. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. However, disturbance to wild horses due to increased human presence, vehicles, noise, etc., could extend beyond the Project Area over the anticipated ten-year Project life, and contribute to cumulative impacts by adding to the changes in distribution and use patterns, and increasing restless behavior and flight response.

Project-related impacts would be localized and minimized due to implementation of the mitigation measures outlined in Section 3.2.18 and concurrent reclamation, as well as the phased nature of the Project and minimal amount of equipment and workers within the Project Area at any one time over the anticipated ten-year Project life. Therefore, based on the above analysis and findings, incremental impacts to wild horses as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minimal.

The implementation of mitigation measures outlined in Section 3.2.18, combined with BMPs, EPMS, and reclamation requirements, would reduce the loss of habitat and water sources and the incremental effects to wild horses and burros as a result of the Proposed Action would not be significant.

4.3.9.2 No Action Alternative

A total of the quantifiable past and present actions and RFFA disturbance within the Wild Horses CESA is approximately 47,247 acres, which is an impact to approximately 56 percent of the CESA. This alternative (approximately five acres) would result in an incremental impact of approximately 0.01 percent. Impacts to wild horses from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

4.3.10 Wildlife

The CESA for wildlife is the Wildlife CESA. This CESA encompasses approximately 432,410 acres and is shown on Figure 4.2.1.

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting wildlife and their habitat include livestock grazing, wildland fires, vegetation treatments, wildlife and game habitat management, ROW construction and maintenance, mineral exploration, mining, and dispersed recreation. These activities have the potential to impact water resources and wildlife habitat, or result in direct impacts to individuals in travel routes, or loss of forage, cover, and habitat, as well as disturbance of mating and brood rearing practices.

Historic fires (2000–2013) have burned approximately 3,789 acres in the Wildlife CESA (approximately 0.9 percent of the CESA). Authorized and closed mineral exploration and mining Notices and plans of operation, as well as mineral material disposal sites, total approximately 1,957 acres (approximately 0.4 percent of the CESA) of surface disturbance. Approximately 15,740 acres of ROWs were issued within the Wildlife CESA that had the potential to create surface disturbance and disturb wildlife species and their habitat and vegetation. There were also approximately 97,621 acres of vegetation treatments that occurred within the Wildlife CESA. The CESA is also comprised of the NDOW Hunt Unit 155, which had the potential to create noise and disturbance to wildlife, or remove or alter habitat. The Wildlife CESA encompasses portions of the Dry Creek, Grass Valley, JD, Santa Fe/Ferguson, Simpson Park, Three Bars, Underwood, and Willow Ranch grazing allotments. Livestock grazing and associated management could have contributed to the establishment and spread of noxious weeds, invasive and non-native species, which could have had an indirect effect on wildlife. However, disturbance to wildlife and their habitat 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 approximately five percent of the CESA. 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.

RFFAs: Potential impacts to wildlife and their habitat from livestock grazing, wildlife and game habitat management, dispersed recreation, ROW construction and maintenance, mineral exploration activities, vegetation treatments including piñon-juniper thinning as a result of the

greater sage-grouse EPM associated with the Proposed Action, or loss of native vegetation associated with potential wildland fires are expected to continue. There are no specific data to quantify impacts to wildlife or their habitat within the CESA as a result of dispersed recreation, livestock grazing, wildlife and game habitat management, vegetation treatments, or potential wildland fires. There would be up to 300 acres of piñon-juniper thinning activities in the Wildlife CESA. There are no pending ROW projects reported in LR2000 in the Wildlife CESA. There are approximately 800 acres of pending minerals projects, which includes the proposed Project.

4.3.10.1 Proposed Action

The Proposed Action (approximately 100 acres of temporary breeding and/or foraging habitat removal) would impact approximately 0.02 percent of the CESA. Quantifiable past and present actions and RFFA disturbance in the Wildlife CESA is approximately 120,207 acres, which results in an incremental impact from the Proposed Action of approximately 0.08 percent. Since there are limited quantifiable data for all activities within the CESA, this calculation is a conservative analysis of the potential incremental impact of the Proposed Action. Project-related impacts would be localized and minimized due to implementation of the EPMS outlined in Section 2.1.9 and concurrent reclamation. Therefore, based on the above analysis and findings, incremental impacts to wildlife species and their habitat as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minimal.

4.3.10.2 No Action Alternative

A total of the quantifiable past and present actions and RFFA disturbance within the Wildlife CESA is approximately 120,207 acres, which is an impact to approximately 28 percent of the CESA. This alternative (approximately five acres) would result in an incremental impact of approximately 0.004 percent. Impacts to wildlife species and their habitat from this alternative, in combination with past and present actions and RFFAs disturbance, would be minimal.

5 CONSULTATION AND COORDINATION

This EA was prepared at the direction of the BLM, MLFO, Battle Mountain District, Nevada, by Enviroscientists, Inc., under a contract with NUG. The following is a list of persons, groups, and agencies consulted, as well as a list of individual responsible for the preparation of this EA.

5.1 Persons, Groups, and Agencies Consulted

Federal Agencies

United States Fish and Wildlife Service

State Agencies

Eric Miskow, NNHP
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Native Americans

Te-Moak Tribe of Western Shoshone, Battle Mountain Band Council
Te-Moak Tribe of Western Shoshone, Elko Band Council
Te-Moak Tribe of Western Shoshone, South Fork Reservation Council
Duckwater Shoshone Tribe

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