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

Environmental Assessment DOI-BLM-NVB010-2009-0102-EA
DATE: July 2010

LOOKOUT MOUNTAIN EXPLORATION PROJECT
ENVIRONMENTAL ASSESSMENT

File Number: NVN-086574

Mount Lewis Field Office
50 Bastian Road
Battle Mountain, NV 89820
Phone: 775-635-4000
Fax: 775-635-4034

BH MINERALS USA INC.
LOOKOUT MOUNTAIN EXPLORATION PROJECT
ENVIRONMENTAL ASSESSMENT

Environmental Assessment

July 2010

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

BH MINERALS USA INC.
LOOKOUT MOUNTAIN EXPLORATION PROJECT
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 BLM Responsibilities and Relationship to Planning 1-4
1.3.1 Shoshone-Eureka Management Plan 1-4
1.3.2 Local Land Use Planning and Policy 1-4
1.4 Scoping 1-5
1.5 Issues 1-5
2 ALTERNATIVES INCLUDING THE PROPOSED ACTION 2-1
2.1 Proposed Action 2-1
2.1.1 Location and Access 2-4
2.1.2 Equipment 2-4
2.1.3 Road Construction 2-5
2.1.4 Drilling 2-6
2.1.5 Trenching and Bulk Sampling 2-7
2.1.6 Ground Water Monitoring Wells 2-7
2.1.7 Water Use 2-8
2.1.8 Work Force 2-8
2.1.9 Surface and Ground Water Control 2-8
2.1.10 Surface Occupancy 2-9
2.1.11 Solid and Hazardous Materials 2-9
2.1.12 Reclamation 2-9
2.1.13 Environmental Protection Measures 2-11
2.2 No Action Alternative 2-15
2.3 Alternatives Considered but Eliminated from Detailed Study 2-16
2.3.1 Cross Country/Overland Travel Alternative 2-16
2.3.2 Use Only Existing Roads Alternative 2-16
2.3.3 Helicopter Drilling Alternative 2-16
3 AFFECTED ENVIRONMENT 3-1
3.1 Introduction 3-1
3.2 Air Quality 3-2
3.3 Cultural Resources 3-3
3.4 Noxious Weeds, Invasive and Nonnative Species 3-3
3.5 Wildlife (including Migratory Birds and Special Status Species) 3-4
3.5.1 Migratory Birds 3-5
3.5.2 Special Status Wildlife Species including Threatened and Endangered Species 3-9
3.6 Native American Concerns 3-10
3.7 Wastes, Hazardous or Solid 3-11
3.8 Water Quality 3-11
3.8.1 Surface Water 3-11
3.8.2 Ground Water 3-11

3.9 Fire Management ... 3-11
3.10 Geology and Minerals ... 3-12
3.11 Paleontological Resources ... 3-12
3.12 Land Use, Access, Public Safety, and Recreation ... 3-12
3.13 Grazing Management ... 3-13
3.14 Socioeconomic Values ... 3-14
3.15 Environmental Justice ... 3-14
3.16 Soils ... 3-15
3.17 Vegetation ... 3-18
3.17.1 Special Status Vegetation Species ... 3-19
3.18 Wetlands and Riparian Zones ... 3-20
3.19 Visual Resources ... 3-20
3.20 Wild Horses and Burros ... 3-20
4 ENVIRONMENTAL CONSEQUENCES ... 4-1
4.1 Proposed Action ... 4-1
4.1.1 Air Quality ... 4-1
4.1.2 Cultural Resources ... 4-1
4.1.3 Noxious Weeds, Invasive and Nonnative Species ... 4-1
4.1.4 Wildlife (including Migratory Birds and Special Status Species) ... 4-2
4.1.5 Native American Concerns ... 4-3
4.1.6 Wastes, Hazardous or Solid ... 4-4
4.1.7 Water Quality ... 4-5
4.1.8 Fire Management ... 4-5
4.1.9 Geology and Minerals ... 4-5
4.1.10 Paleontological Resources ... 4-5
4.1.11 Land Use, Access, Public Safety, and Recreation ... 4-6
4.1.12 Grazing Management ... 4-6
4.1.13 Socioeconomic Values ... 4-6
4.1.14 Environmental Justice ... 4-7
4.1.15 Soils ... 4-7
4.1.16 Vegetation ... 4-7
4.1.17 Wetlands and Riparian Zones ... 4-7
4.1.18 Visual Resources ... 4-7
4.1.19 Wild Horses and Burros ... 4-8
4.2 No Action Alternative ... 4-8
4.2.1 Air Quality ... 4-8
4.2.2 Cultural Resources ... 4-8
4.2.3 Noxious Weeds, Invasive and Nonnative Species ... 4-9
4.2.4 Wildlife (including Migratory Birds and Special Status Species) ... 4-9
4.2.5 Native American Concerns ... 4-9
4.2.6 Wastes, Hazardous or Solid ... 4-9
4.2.7 Water Quality ... 4-9
4.2.8 Fire Management ... 4-9
4.2.9 Geology and Minerals ... 4-9
4.2.10 Paleontological Resources ... 4-9
4.2.11 Land Use, Access, Public Safety, and Recreation ... 4-10
4.2.12 Grazing Management ... 4-10
4.2.13 Socioeconomic Values ... 4-10

4.2.14 Environmental Justice 4-10
4.2.15 Soils 4-10
4.2.16 Vegetation 4-10
4.2.17 Wetlands and Riparian Zones 4-10
4.2.18 Visual Resources 4-11
4.2.19 Wild Horses and Burros 4-11
5 CUMULATIVE EFFECTS 5-1
5.1 Introduction 5-1
5.2 Past and Present Actions 5-2
5.2.1 Mineral Exploration and Mining 5-4
5.2.2 Livestock Grazing 5-5
5.3 Reasonably Foreseeable Future Actions 5-7
5.4 Impact Analysis 5-8
5.4.1 Air Quality 5-8
5.4.2 Noxious Weeds, Invasive and Nonnative Species 5-8
5.4.3 Wildlife (including Migratory Birds and Special Status Species) 5-9
5.4.4 Water Quality 5-11
5.4.5 Grazing Management 5-12
5.4.6 Soils 5-13
5.4.7 Vegetation 5-14
5.4.8 Visual Resources 5-15
6 CONSULTATION AND PUBLIC INPUT 6-1
6.1 List of Preparers 6-1
6.2 Persons, Groups and Agencies Contacted 6-1
7 LITERATURE CITED 7-1

LIST OF FIGURES

Figure 1.1.1: Project Area 1-2
Figure 1.1.2: Project Area and Existing Disturbance 1-3
Figure 2.1.1: Proposed Disturbance 2-2
Figure 2.1.2: Proposed Phase I Disturbance 2-3
Figure 5.1.1: Cumulative Effects Study Areas 5-3

LIST OF TABLES

Table 2.1-1: Acreage of Existing and Proposed Project Disturbance 2-1
Table 2.1-2: Anticipated Reclamation Schedule 2-10
Table 2.1-3: Proposed Seed Mix 2-11
Table 3.1-1: Supplemental Authorities and Rationale for Detailed Analysis for the Proposed Action 3-1
Table 3.1-2: Resources or Uses Other Than the Supplemental Authorities 3-2
Table 3.5-1: Migratory Bird Species with Breeding Distributions that Overlap with the Project Area 3-6
Table 3.16-1: Soil Series within the Project Area 3-15
Table 5.1-1: Cumulative Effects Study Areas 5-2

Table 5.2-1: Allotment Information for the CESAs 5-6

APPENDIX

Appendix A **MOU between BHM and the County of Eureka Board of Commissioners**

LIST OF ACRONYMS

amsl	above mean sea level
AUMs	Animal Unit Months
BAPC	Bureau of Air Pollution Control
BHM	BH Minerals USA, Inc.
BLM	Bureau of Land Management
BMPs	Best Management Practices
BMRR	Bureau of Mining Regulation and Reclamation
CESAs	Cumulative Effects Study Areas
CFR	Code of Federal Register
CO	carbon monoxide
ECRD	Eureka County Roads Department
EPA	Environmental Protection Agency
ESA	Endangered Species Act of 1973, as amended
˚F	Fahrenheit
FLPMA	Federal Land Policy and Management Act of 1976
HMA	Herd Management Area
ID	Interdisciplinary
MBTA	Migratory Bird Treaty Act
MDB&M	Mount Diablo Base and Meridian
MLFO	Mount Lewis Field Office
MOU	Memorandum of Understanding
MSDS	Material Safety Data Sheets
MSHA	Mine Safety Health Administration
NAC	Nevada Administrative Code
NDA	Nevada Department of Agriculture
NDEP	Nevada Department of Environmental Protection
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
NNHP	Nevada Natural Heritage Program
NRCS	Natural Resource Conservation Service
NRS	Nevada Revised Statutes
NSAAQS	Nevada State Ambient Air Quality Standard
RFFA	Reasonably Foreseeable Future Actions
RMP	Shoshone-Eureka Resource Management Plan
ROW	right-of-way
ROD	Record of Decision
SHPO	Nevada State Historic Preservation Office
SIP	State Implementation Plan
TCP	Traditional Cultural Properties
USFWS	United States Fish and Wildlife Service
VRM	Visual Resource Management

BH MINERALS USA INC.
LOOKOUT MOUNTAIN EXPLORATION PROJECT
ENVIRONMENTAL ASSESSMENT

1 INTRODUCTION / PURPOSE OF AND NEED FOR ACTION

1.1 Introduction

The Lookout Mountain Exploration Project (Project) is located approximately eight miles south of the town of Eureka, Nevada, in the Fish Creek Range at elevations ranging between 6,860 feet above mean sea level (amsl) to 8,770 feet amsl. Figure 1.1.1 shows the Project area boundary, which encompasses all or portions of Sections 2, 3, and 4, Township 17 North, Range 53 East (T17N, R53E) and Sections 15, 16, 21, 22, 27, 28, 33, 34, and 35, T18N, R53E, Mount Diablo Base and Meridian (MDB&M), Eureka County, Nevada (Project Area).

BH Minerals USA Inc. (BHM) proposes to expand Notice-level exploration activities on public lands under two separate Notices out of the Bureau of Land Management (BLM) Mount Lewis Field Office (MLFO), Battle Mountain District (BLM Notices #NVN-085633 and #NVN-085698). The Notice-level activities included construction of drill sites, roads, and temporary structures/staging areas. The combined acres of existing and proposed disturbance on BLM-administered and private land is greater than five acres; therefore, a Plan of Operations/Permit for Reclamation (Plan) (Record Number NVN-086574/Permit for Reclamation No.___) was submitted to the BLM and the Nevada Division of Environmental Protection (NDEP), Bureau of Mining Regulation and Reclamation (BMRR) in December 2008 and revised in May 2009.

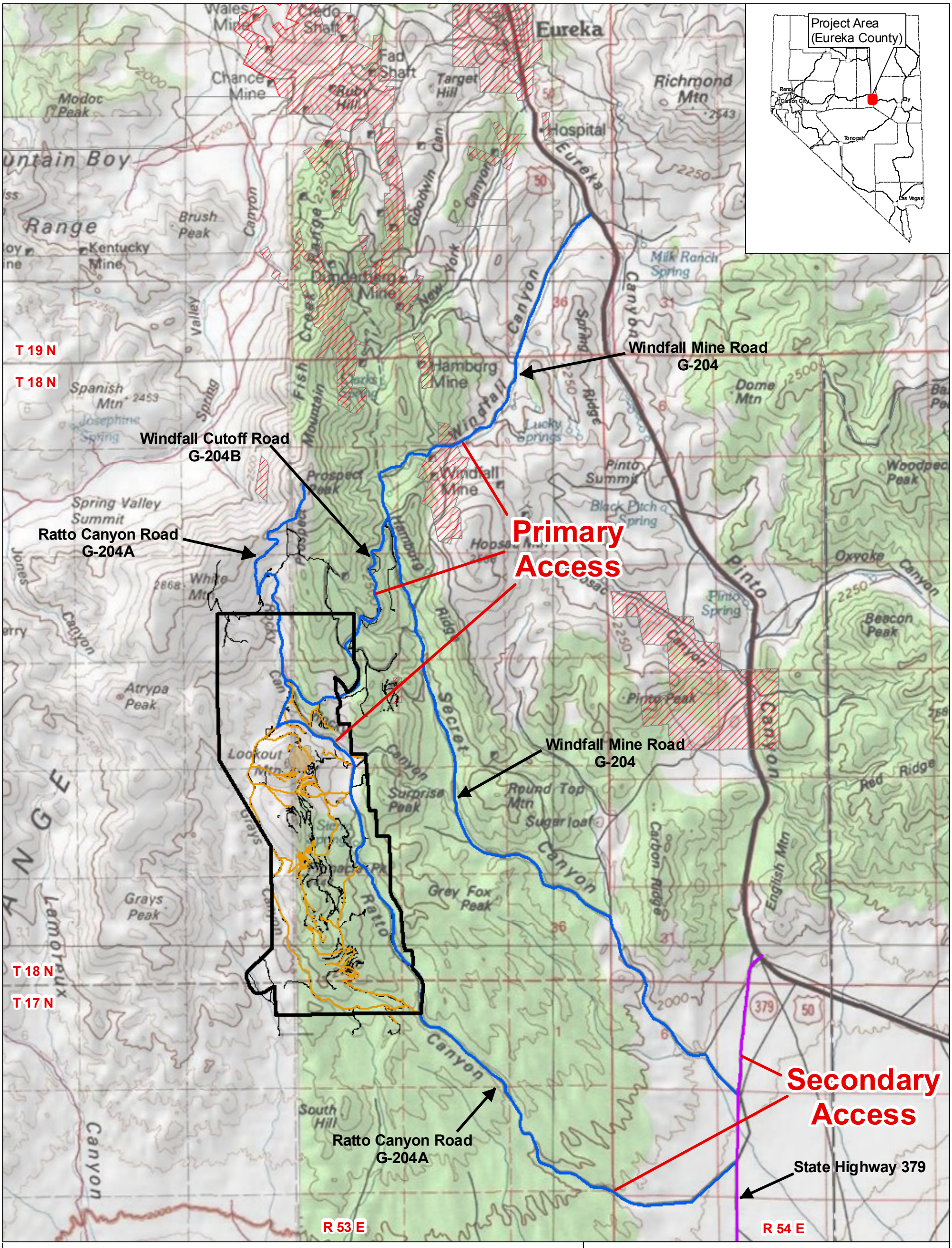
The Project Area encompasses approximately 2,988 acres and is located entirely on public land administered by the BLM's MLFO. Figure 1.1.1 shows access to the Project, the Project boundary, and the surface ownership in the Project Area. Figure 1.1.2 shows pre-1981 roads and the post-1981 existing disturbance by a previous operator (Echo Bay) within the Project Area. The previous disturbance is permitted under a separate plan of operations and Permit for Reclamation. Figure 1.1.2 also shows the existing disturbance by BHM within the Project Area.

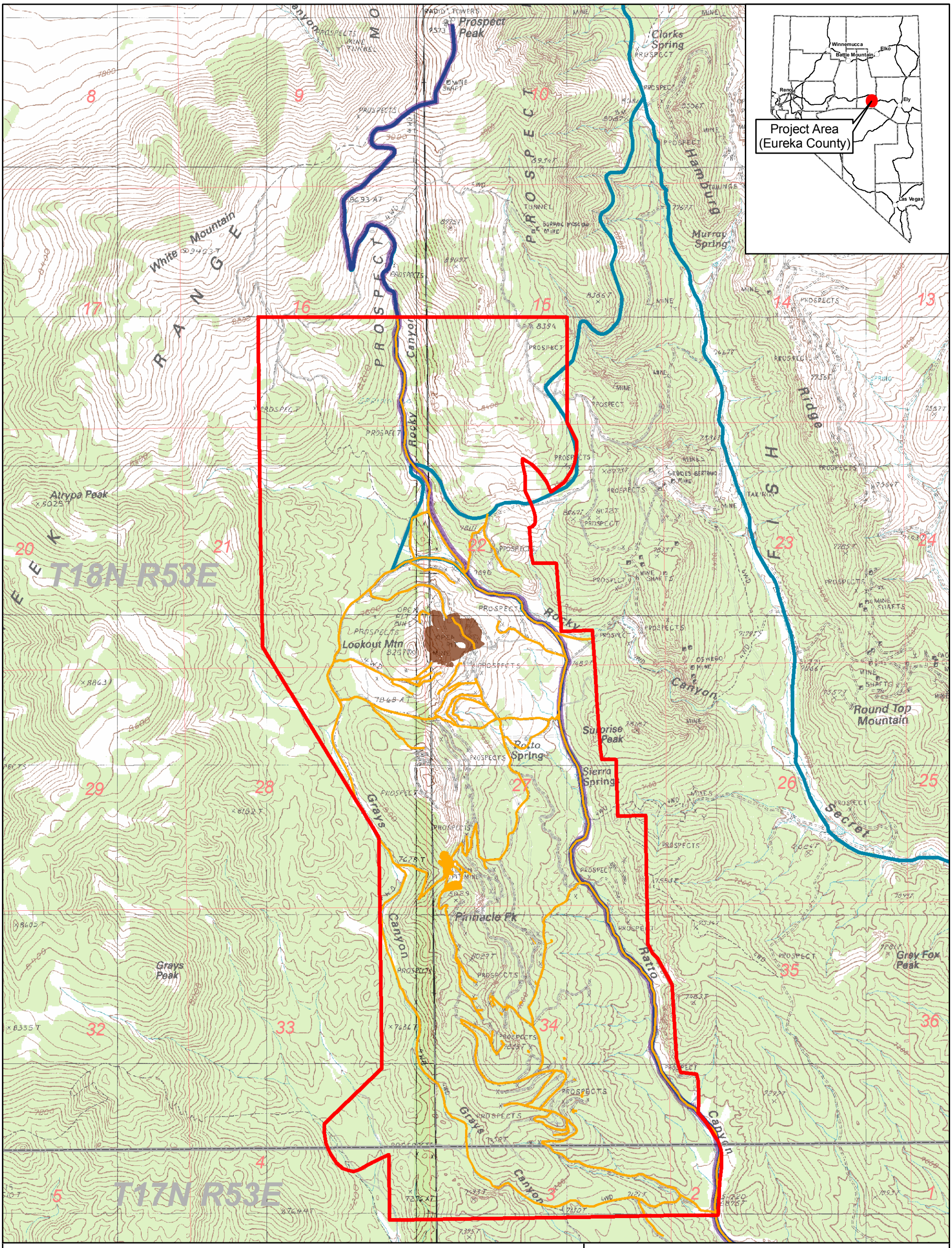
Echo Bay calculated a pre-September 1993 disturbance of approximately 150 acres in the Project Area. The disturbance included drill access roads, drill pads, trenches, a few shafts, adits and prospect pits, a small open pit mine and dump, and a haul road. Echo Bay's drilling and reclamation activities resulted in approximately 144 acres of disturbance. Echo Bay completed the required reclamation for all of their 1994 to 1996 activities, except for access and drill road disturbance totaling 8.5 acres.

This EA incorporates by reference and tiers to the EA prepared for Alta Gold Company's Lookout Mountain Exploration Project (NV63-EA98-66) prepared in March 1999.

1.2 Purpose of and Need for Action

The purpose of this action is to provide BHM the opportunity to conduct exploration including drill site and sump construction, and road construction, necessary to verify the mineral resources.


Project Area
(Eureka County)
Windfall Mine Road
G-204
Windfall Cutoff Road
G-204B
Ratto Canyon Road
G-204A
Primary
Access
Windfall Mine Road
G-204
Ratto Canyon Road
G-204A
Secondary
Access
State Highway 379
T 19 N
T 18 N
T 18 N
T 17 N
R 53 E
R 54 E
Eureka
Hospital
Richmond Mtn
Modoc Peak
Chance Mine
Ruby Hill
Target Hill
Brush Peak
Kentucky Mine
Milk Ranch Spring
Hamburg Mine
Windfall Mine
Dome Mtn
Spanish Mtn
Spring Valley Summit
Pinto Summit
Pinto Spring
Pinto Peak
Beacon Peak
Atrypa Peak
Lookout Mtn
Surprise Peak
Round Top Mtn
Sugarloaf
Grey Fox Peak
Grays Peak
Red Ridge
English Mtn
Carbon Ridge
South Hill
Secret Canyon
Ratto Canyon
Pinto Canyon
Oxyoke Canyon
Goodwin Canyon
New York Canyon
Fish Mountain Canyon
Prospect Ridge
Hamburg Ridge
Windfall Canyon
Spring Canyon
Lemoroux Canyon
Jones Canyon
Grays Canyon
Rocky Canyon
Valley Spring
Canyon
Eureka Canyon
Legend
Pre-1981 Existing Roads/Disturbance
State Highway 379
County Maintained Roads
Existing Roads
Pit Area
Project Boundary
Private Land
Public Land
N
0
1
2 Miles
Projection: UTM Zone 11 North, NAD83
NATIONAL SYSTEM OF PUBLIC LANDS
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 by updated without notification.
BUREAU OF LAND MANAGEMENT
LOOKOUT MOUNTAIN EXPLORATION PROJECT
Project Location and Access Map
Figure 1.1.1
06/16/2010



Legend

- Project Area
- Pre-1981 Roads/Disturbance
- County Maintained Roads
- Prospect Peak Comm. Site ROW
- Existing Roads
- Open Pit Area

0 2,000 4,000 Feet

N

Projection: UTM Zone 11 North, NAD83

NATIONAL SYSTEM OF PUBLIC LANDS

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 by updated without notification.

BUREAU OF LAND MANAGEMENT

LOOKOUT MOUNTAIN EXPLORATION PROJECT

Project Area Showing Existing and Proposed Disturbance

Figure 1.1.2

06/16/2010

The need for the action is established by the BLM's responsibility under its 2008 Energy and Mineral Policy, the Federal Land Policy and Management Act of 1976 (FLPMA), and BLM Surface Management Regulations at 43 CFR 3809, to respond to an exploration plan of operations and to take any action necessary to prevent unnecessary or undue degradation of the lands.

1.3 BLM Responsibilities and Relationship to Planning

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

1.3.1 Shoshone-Eureka Management Plan

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

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

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

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

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

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

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

1.3.2 Local Land Use Planning and Policy

The Eureka County 1973 General Plan, updated in 2000, contains a description of local land uses, restrictions on development, and recommendations for future land use planning. The county's Overall Economic Development Plan, approved by the County Commissioners in 1997, intended to broaden the economic development of the county. Both of these plans contain recommendations for land use planning. In addition, Eureka County in cooperation with the Nevada Division of State Lands has adopted a Policy for Public Lands within its jurisdiction. This plan was developed in response to Nevada Senate Bill 40 directing the State Land Use Planning Agency to work with local planning entities to prepare local plans and policy statements regarding use of federal lands in Nevada. Policies within the plan promote the expansion of mining operations/areas. The Proposed Action would be in conformance with these plans and policies.

1.4 Scoping

The Project was internally scoped by the BLM Interdisciplinary (ID) team. A scoping meeting was held August 31, 2009, at the BLM office in Battle Mountain. Interested Native American tribes were sent a letter on October 6, 2009, informing them of the Project.

1.5 Issues

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

- Air Quality;
- Cultural Resources;
- Noxious Weeds, Invasive and Nonnative Species;
- Wildlife (including Migratory Birds and Special Status Species)
- Native American Concerns;
- Wastes, Hazardous or Solid;
- Water Quality;
- Fire Management;
- Geology and Minerals;
- Paleontological Resources;
- Land Use, Access, Public Safety, and Recreation;
- Grazing Management;
- Socioeconomic Values;
- Environmental Justice;
- Soils;
- Vegetation;
- Wetlands and Riparian Zones;
- Visual Resources; and
- Wild Horses and Burros.

2 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Proposed Action

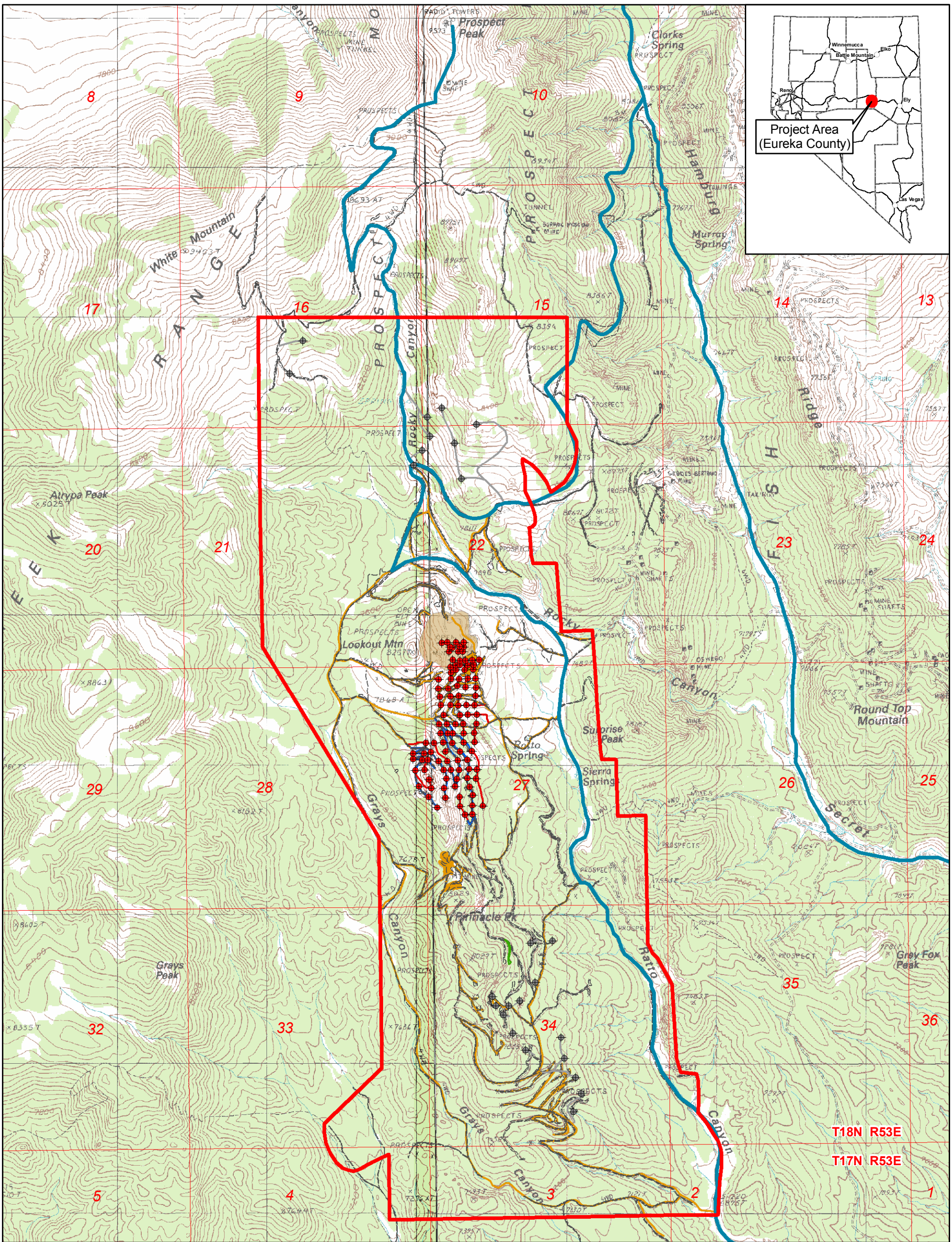
Under the Proposed Action, BHM proposes to conduct exploration related activities in a phased manner that would create approximately 250 acres of new surface disturbance. Exploration activities would consist of exploration drilling from existing disturbance and constructed drill sites that would be accessed by existing roads and new road construction, construction of trenches or bulk sampling, and the installation of up to three ground water monitoring wells. In addition to proposed surface disturbance, there are approximately 7.9 acres of Notice-level disturbance and 8.5 acres of existing roads that would be reclaimed for a total Project-related disturbance of 266.4 acres. The proposed disturbance is outlined by each type of activity in Table 2.1-1.

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

Exploration Activity	Notice-Level	Existing Post-1981 Disturbance to be Included in the Proposed Action (acres)		Proposed Surface Disturbance (acres)		Total Surface Disturbance (acres)
		Phase I	Future Phases	Phase I	Future Phases	
Constructed Roads (includes culverts)	4.98	1.12	7.38	3.33	70.10	86.91
Constructed Drill Sites (includes sumps and spoils)	2.92	0.00	0.00	13.46	157.11	173.49
Trenching/Bulk Sampling	0.00	0.00	0.00	0.00	5.00	5.00
Groundwater Monitoring Wells	0.00	0.00	0.00	0.00	1.00	1.00
Total Disturbance	7.90	1.12	7.38	16.79	233.21	266.40

Project activities would be conducted in phases. The first phase of bonding would include the existing post-January 1, 1981, roads that would be utilized for Phase I activities (1.12 acres), total Notice-level disturbance (7.9 acres), and the proposed Phase I disturbance (16.79 acres). A cost estimate would be prepared for a total of 25.81 acres. The additional 233.21 acres of proposed surface disturbance and 7.38 acres of post-January 1, 1981, existing roads would then be bonded in subsequent phases. All proposed activities and existing disturbance within the Project Area boundary and are shown on Figure 2.1.1. Planned (Phase I) disturbance is shown on Figure 2.1.2.

In order to provide the BLM and BMRR relevant data concerning surface disturbance, BHM would provide documentation (work plan) on the planned exploration prior to commencing that exploration in a given area at least one month in advance with specific locations of roads and drill sites. In the event that BHM revises Phase I activity or conducts exploration activities beyond Phase I, BHM would provide BLM and BMRR an amended reclamation cost estimate that the BLM and BMRR would approve prior to BHM commencing work. In addition, BHM



Legend

- Notice-Level Drill Sites
- Proposed Phase I Drill Sites
- Notice-Level Roads
- Proposed Road Construction
- Existing Roads
- Post-1981 Existing Roads Requiring Reclamation
- County Maintained Roads
- Pre-1981 Existing Roads/Disturbance
- Pit Area
- Reclaimed Areas
- Project Area

0 2,000 4,000 Feet

N

Projection: UTM Zone 11 North, NAD83

NATIONAL SYSTEM OF PUBLIC LANDS

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 by updated without notification.

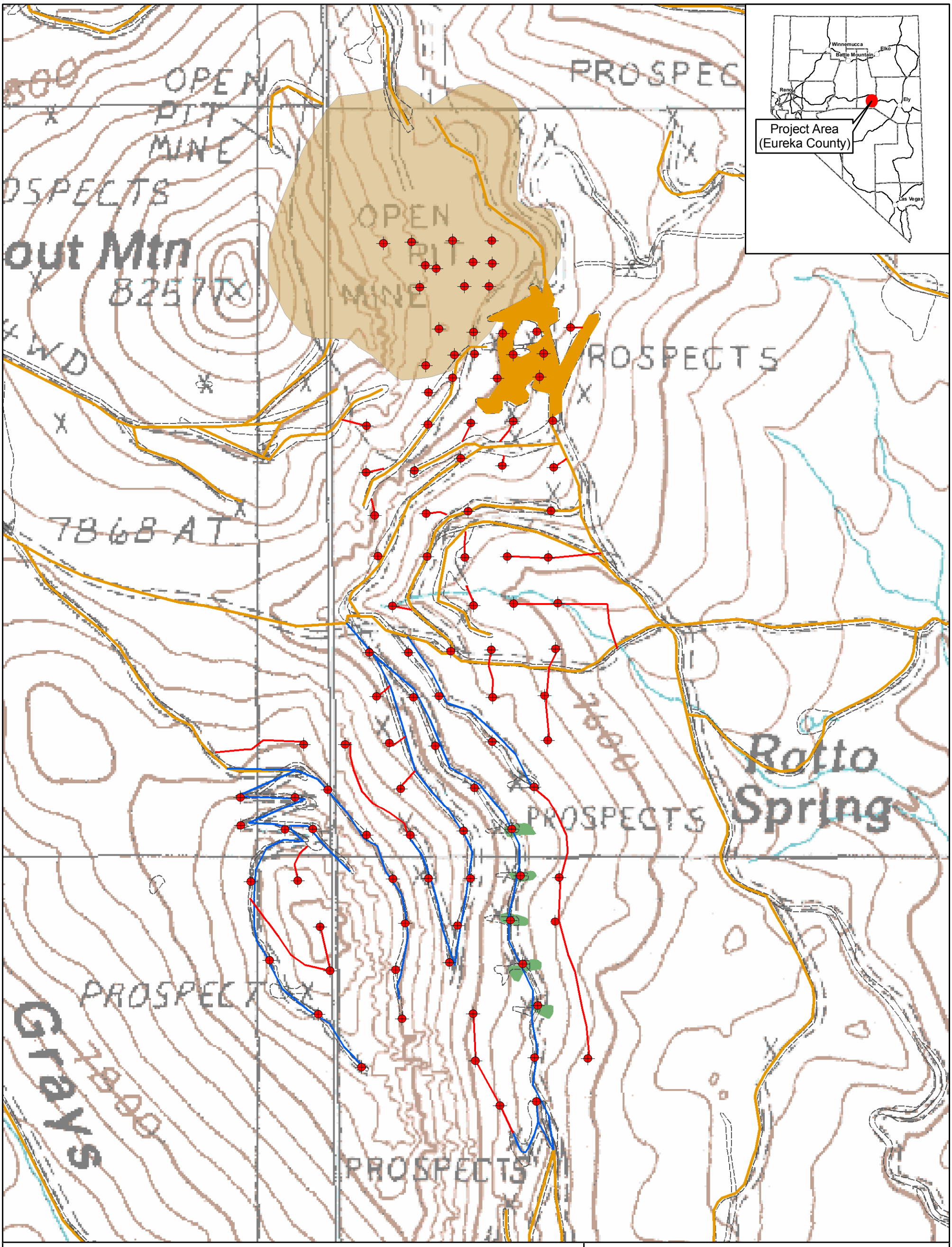
BUREAU OF LAND MANAGEMENT

LOOKOUT MOUNTAIN EXPLORATION PROJECT

Proposed Disturbance

Figure 2.1.1

06/16/2010



Legend

- Proposed Phase I Drill Sites
- Proposed Road Construction
- Existing Roads
- Post-1981 Existing Roads Requiring Reclamation
- Pre-1981 Existing Roads/Disturbance
- Pit Area
- Reclaimed Areas

0 400 800 Feet

N

Projection: UTM Zone 11 North, NAD83

T 18 N, R 53 E

NATIONAL SYSTEM OF PUBLIC LANDS

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 by updated without notification.

BUREAU OF LAND MANAGEMENT

LOOKOUT MOUNTAIN EXPLORATION PROJECT

Proposed Phase 1 Disturbance

Figure 2.1.2

06/16/2010

would provide to the BLM and BMRR an annual report on, or before, April 15th of each year that documents surface disturbance locations, types of surface disturbance, and any completed concurrent reclamation.

BHM currently has two Notices in the Project Area with a total of 7.9 acres of surface disturbance, 3.22 acres under Notice NVN-085633 and 4.68 acres under Notice NVN-085698. In addition, there are approximately 8.5 acres of post-January 1, 1981, roads within the Project Area which would be closed and combined into this Plan once it is approved. BHM would reclaim post-January 1, 1981, existing roads within the Project Area that are utilized for Project-related activities.

The remaining 240.59 acres of disturbance would occur in subsequent phases over the next ten years. Locations of the disturbance in Phase I and subsequent phases would be based on the results of prior exploration activities. In order to provide the BLM and BMRR relevant data concerning surface disturbance, BHM would provide documentation on the areas of planned exploration prior to commencing exploration in a given year at least one month in advance with specific locations of roads and drill sites. The BLM would review the reclamation cost estimate annually rather than every three years for this Project. In addition, BHM would provide to the BLM and NDEP an annual report on, or before, April 15th of each year that documented surface disturbance locations, types of surface disturbance, and any completed concurrent reclamation.

2.1.1 Location and Access

The Project is accessed southwest of the town of Eureka, Nevada, from U.S. Highway 50 via the Windfall Mine Road (County Maintained Road G-204) to the Windfall Cutoff Road (County Maintained Road G-204B). Secondary access to the Project Area is from U.S. Highway 50, south of Eureka, via State Route 379 to the Ratto Canyon Road (County Maintained Road G-204A). Figure 1.1.1 is a general location map that includes Project access. Existing pre-1981 access roads within and adjacent to the Project Area are shown on Figure 1.1.2.

2.1.2 Equipment

The following list of equipment is expected to be used at some point in the life of the Project:

- One truck- or track-mounted core rig;
- Up to two truck- or track-mounted reverse circulation drill rigs, or equivalent;
- Up to three water trucks (3,500-gallon);
- Up to three mud mixing tanks and pumps;
- Up to three circulation tanks;
- Up to three pickups or one-ton trucks;
- Up to three pipe trucks;
- One booster truck;
- One auxiliary air compressor;
- One portable light plants/generator;
- One Cat D8 bulldozer, or equivalent;
- One excavator; and
- One all-terrain vehicle with a seed broadcaster.

Generally, a Cat D8L or equivalent would be used to construct roads and drill sites where needed. Roads and drill sites would be reclaimed using an excavator and an all-terrain vehicle with a seed broadcaster, or comparable method. BHM would take steps to prevent fires by ensuring that each field vehicle carries hand tools and a fire extinguisher and applies Fire Prevention Mitigation Measures. 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 nonoperation.

2.1.3 Road Construction

The Project Area would be accessed via existing roads as described in Section 2.1.1 and shown in Figure 1.1.2. The access roads are maintained by the Eureka County Roads Department (ECRD) to standards acceptable for Project Use. Current county maintenance activities on county maintained roads G204, G-204A, and G-204B include, but are not limited to, repairs to damage caused by natural or other causes, maintenance or replacement of unsafe structures, snow removal, maintaining the shape of the road to perpetuate drainage, blading the road, and keeping the drainages ditches open and operational. In addition, BHM has entered into a Memorandum of Understanding (MOU) with the County of Eureka Board of Commissioners to ensure adequate maintenance standards are met by the ECRD (Appendix A). BHM does not propose any changes or alterations to existing access roads outside of the Project Area.

When new road construction is necessary, roads would be built with an approximately 14-foot running surface including the safety berm, as required by Mine Safety Health Administration (MSHA). Road construction would occur in areas with varying topography. As a result, the disturbance widths would vary between 16 feet and 27 feet with an average width of 22 feet. Approximately 6,569 linear feet (3.33 acres) of new road would be constructed under Phase I. In addition, approximately 3,500 linear feet of existing post-January 1, 1981, roads would be utilized for Project-related activities in Phase I. Existing roads are estimated to have an average disturbance width of 14 feet. All road construction activities in the Project Area would be consistent with applicable BLM approved Best Management Practices (BMPs).

Drainage structures would be constructed or installed, as necessary, to further prevent or minimize erosion. 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 with a road, BMPs established by the NDEP and the Nevada Division of Conservation Districts (1994) Handbook of Best Management Practices, adopted by the State Environmental Commission on December 7, 1994, would be followed to minimize the surface disturbance and erosion potential. Culverts would be constructed as necessary at the Project. No culverts are anticipated for Phase I activities. Culvert installation for future phases would be based on Project conditions and the location of exploration activities. Exact locations cannot be identified at this time. When BHM determines that a culvert is necessary, the placement and size would be incorporated into the reclamation cost estimate that would be approved by the BLM and NDEP prior to construction.

Road construction would occur intermittently throughout the life of the Project. BHM would utilize existing roads to the extent possible; however, alternate road locations may be determined in the field based on geologic information collected during the exploration program. Alternate

road locations would be authorized by the BLM prior to construction. Road grades would be kept to an average of ten percent or less to minimize erosion. Where steeper grades are unavoidable, water bar spacing would not exceed up to 400 feet. Water bar spacing on flatter slopes would average 300 to 400 feet, or at a distance approved by the BLM.

Maintenance of existing and proposed roads would include minor seasonal regrading and re-establishment of water bars as necessary. It is anticipated that some of the pre-1981 roads that would be used for drill access would require maintenance, which would consist of clearing off the road surface and snow removal in the event of winter usage. Maintenance activities would not increase the surface disturbance area. Erosion control would be monitored in the spring and fall. Road maintenance would consist of smoothing rutted surfaces and holes on existing access and drill roads. Maintenance of existing roads would be conducted only on an as-needed basis.

2.1.4 Drilling

New drill site disturbance would be kept to the minimum necessary for safe access and a safe working area for equipment and crew. Sumps would be constructed as necessary to collect drill cuttings and manage drilling fluids. Drill sites would not be located in drainages. During Phase I BHM would conduct exploration drilling from up to 104 drill sites utilizing up to three track- or truck-mounted reverse circulation or core drill rigs. The proposed drill sites are anticipated to have a surface disturbance of 13.46 acres.

A total of four drill sites would be located on pre-existing disturbance, 65 drill sites would be constructed on existing roads, and 35 drill sites would be constructed on proposed roads. Drill sites would have working areas of approximately 50 feet by 80 feet. The drill sites would be constructed in areas with varying topography. The disturbance widths of the drill sites would vary from approximately 56 feet to approximately 96 feet. Topsoil removed from drill pads would be stockpiled as part of the fill slope.

Drill holes would be both vertical and angled with drill depths ranging from 300 feet to 2,000 feet. Up to three pre-collar holes would be drilled with a reverse circulation rig up to approximately 1,000 feet deep and then completed with a core rig. Cuttings not bagged and removed during sample collection would be disposed on site prior to reclamation. All drill holes except the three pre-collar holes would be plugged prior to the drill rig moving from the drill site in accordance with Nevada Revised Statute (NRS) 534 and Nevada Administrative Code (NAC) 534.4369 and NAC 534.4371.

Standard drilling procedures usually require a geologist to be on site throughout Project-related drilling activities. The duties of the geologist generally include sitting the drill rig, logging chips or core from each hole, determining the maximum depth of each hole, and advising the drill operator as needed. The geologist usually travels to and from the drill site in a separate four-wheel drive pickup truck.

Standard drill rig crews consist of a drill operator and one or two helpers. The helpers remove and box the recovered core samples, disperse the excess cuttings from reverse circulation rigs into nearby sumps or adjacent to the hole, 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 four-wheel drive vehicles. Up to three drill rigs (both reverse circulation and core) are expected to be in operation at the Project Area at any time.

Each drill crew includes approximately three contract personnel, plus a BHM-employed geologist. Core drilling would operate 24 hours a day, seven days a week. Reverse circulation drilling would occur 12 hours a day, seven days a week.

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

All Project-related regulated refuse would be removed from the Project Area and disposed of in a state, federal, or local designated area on a daily basis. No refuse would be disposed of on site. In the event that hazardous or regulated materials such as diesel fuel are spilled, measures would be taken to control the spill and the NDEP would be notified. All drill holes would be abandoned in accordance with applicable federal and state standards.

2.1.5 Trenching and Bulk Sampling

BHM would possibly perform trenching/bulk sampling activities in subsequent phases of the Project. Trenching or bulk sampling would be conducted with a Caterpillar 320 excavator or equivalent and possibly a Caterpillar D8 or equivalent. Excavated materials would be stockpiled along the length of each trench, or otherwise placed in close proximity to facilitate backfilling. Exact dimensions and locations of the trenches/bulk samples can not be identified at this time; however, it is anticipated that these activities could disturb up to five acres over the life of the Project. Surface disturbance would include the excavation, the spoil pile, and any required equipment access. The exact dimensions and type of excavation required, as well as the location, would be determined by BHM as the Project progresses. Determinations would be based on data collected through previous phases. Once the locations of trenches/bulk samples have been determined, and prior to excavation, BHM would provide the BLM with the proposed location(s) of trenches/bulk samples via the annual work plan to ensure the location(s) would not impact sensitive resources, notify the BMRR, as well as adjust the reclamation cost estimate accordingly.

2.1.6 Ground Water Monitoring Wells

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

The location and depth of potential ground water monitoring wells can not be determined at this time. Once determined, BHM would provide the proposed location(s) of the ground water monitoring wells to the BLM via the annual work plan to ensure the location(s) would not impact sensitive resources, notify the BMRR and the Division of Water Resources, as well as adjust the reclamation cost estimate accordingly.

2.1.7 Water Use

Drill holes would range from 300 feet to 2,000 feet in depth. Drill fluids would be managed with the use of sumps at each drill site. Core drilling requires recirculating drilling fluid to cool the bit and remove cuttings. Water, with or without nontoxic drilling fluid additives, may be utilized as necessary.

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

Only water or nontoxic drilling fluids would be utilized, as necessary, during drilling. Each reverse circulation drill rig would use approximately 2,000 to 3,000 gallons of water per day. Each core rig would use up to 16,000 gallons per day. The number or trips to obtain the water required on any day would be based on the number of active rigs as well as the type of water truck being used. BHM would obtain water from the city of Eureka. It is possible that BHM may obtain water from a ranch in Fish Lake Valley in the future. BHM would obtain the proper permits prior to using water. The water truck would use roads maintained by the ECRD when traveling outside of the Project Area to obtain water.

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

2.1.8 Work Force

Up to a total of 12 individuals may be working at any time on the Project.

2.1.9 Surface and Ground Water Control

Sediment sumps would be constructed at each drill site to collect drill cuttings and manage drill fluids. Drill sites would not be located in drainages. Should any drainages be disturbed, they would be re-shaped to approach the pre-construction contours. If culverts have been installed, they would be removed and the drainage would be returned to pre-Project condition. The resulting channels would be of the same capacity as up and downstream reaches and would be made non-erosive by use of surface stabilization techniques (rip-rap from a BLM approved source) where necessary, and ultimately revegetated. Following completion of earthwork, all disturbed areas would be broadcast seeded.

The drill holes would be plugged by placing drill cuttings or inorganic fill material into the total depth of the hole, or if ground water is encountered, plugged as a well pursuant to NAC 534.420. The depth to ground water is unknown.

2.1.10 Surface Occupancy

Under CFR 3809 Part 710 Section 3715.01, occupancy means full or part-time residence on the public lands. It also means activities that involve residence; the construction, presence, or maintenance of temporary or permanent structures that may be used for such purposes; or the use of a watchman or caretaker for the purpose of monitoring activities. Residence or structures include, but are not limited to, barriers to access, fences, tents, motor homes, trailers, cabins, houses, buildings, and storage of equipment or supplies. BHM plans to utilize several temporary structures. The structures would be used as a temporary office and to safely store drilling supplies.

2.1.11 Solid and Hazardous Materials

All nonhazardous refuse generated by the Project would be disposed of off site at an authorized landfill facility consistent with applicable regulations. No refuse would be disposed of within the Project Area. Water and/or nontoxic drilling fluids would be utilized as necessary during drilling and would be stored at the Project Area.

A portable restroom facility will be located on site. The location will vary based on Project activities. The portable restroom will be rented and the maintenance schedule will be determined by the rental company per applicable regulations and contract stipulations. No specific schedule or location can be provided at this time.

Toxic substances utilized at the Project Area would include diesel fuel, gasoline, and lubricating grease. Approximately 400 gallons of diesel fuel and gasoline would be stored in fuel delivery systems on the drill rig to be used to support vehicles. Approximately 100 pounds of lubricating grease would be stored on the drill rig or transported by drill trucks. In the event that hazardous (e.g., gasoline) or regulated materials are spilled, measures would be taken to control the spill, and the BLM and/or NDEP would be notified as required. Any hazardous substance spills would be handled in accordance with BHM's Spill Contingency Plan, including an immediate cleanup and any resulting waste transferred off site in accordance with all applicable local, state, and federal regulations. Contract drillers would maintain spill kits on site for use in case of a spill.

2.1.12 Reclamation

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

Regrading and reshaping of all constructed drill sites, constructed exploration roads, and existing post-January 1, 1981 roads utilized for Project-related activities would be completed to approximate the original topography. Fill material, enhanced with growth media, would be pulled onto the roadbeds to fill the road cuts and restore the slope to natural contours. Sumps

would be backfilled with the stockpiled spoil pile. Reclamation would be completed with an excavator and dozer as necessary.

Drill sites constructed on existing pre-January 1, 1981, roads would be reclaimed back to pre-Project condition. Drill sites constructed on post-January 1, 1981, roads and disturbance would be reclaimed.

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

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

Timing of revegetation activities is critically important to the overall success of the program and would follow the schedule outlined in Table 2.1-2. Seeding activities would be timed to take advantage of optimal climatic periods and would be coordinated with other reclamation activities and would use a BLM-approved seed mix such as the one in Table 2.1-3. 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. The seeding would be completed using a broadcast method and then raked. The reclaimed surfaces would be left in a textured or rough condition (small humps, pits, etc.). Broadcast seed application would be at the rate of approximately 13.0 pounds of pure live seed per acre and native seed would be used, when available. Only certified weed-free seed would be used for reclamation seeding. Early spring seeding may be utilized for areas not seeded in the fall. Reclamation activities would be coordinated with the BLM and the BMRR, as necessary. Site monitoring for stability and revegetation success would be conducted once a year, during the spring or fall, for a minimum of three years until attainment of the revegetation standards.

Table 2.1-2: Anticipated Reclamation Schedule

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

Note: Regrading activities could occur year-round.

Table 2.1-3: Proposed Seed Mix

Common Name	Scientific Name	Lbs./Acre (bulk)
Bluebunch wheatgrass	***Pseudoroegneria spicata* ssp. *spicata***	**2.0**
Thurbers needlegrass	***Stipa thurberiana***	**2.0**
Idaho fescue	***Festuca idahoensis***	**2.0**
Arrowleaf balsamroot	***Balsamorhiza sagittata***	**2.0**
Palmer penstemon	***Penstemon palmeri***	**0.5**
Western yarrow	***Achillea millefolium***	**0.5**
Snowberry	***Symphoricarpos albus***	**4.0**
Total		**13.0**

Note: If the species listed above are not reasonably available during reclamation, BHM would contact the BLM to obtain an alternate seed mix.

Post-closure management would commence on any reclaimed area following completion of the reclamation work for the area. Post-closure management would extend until the reclamation of the site or component has been accepted by both the BLM and BMRR. For bonding purposes, a three-year post-closure management period is assumed following completion of reclamation construction on any site. For sites reclaimed early in the operations, management of the reclaimed sites would occur concurrently with operational site management. Annual reports showing reclamation progress would be submitted to the BLM and BMRR by April 15th.

2.1.13 Environmental Protection Measures

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

Air Quality

- Emissions of fugitive dust from disturbed surfaces would be minimized by utilizing appropriate control measures. Surface application of water from a water truck is the current method of dust control during high wind conditions.

Paleontological Resources

- BHM would not knowingly disturb, alter, injure, or destroy any scientifically important paleontological deposits. If BHM discovers any paleontological resource that might be altered or destroyed by operations, the discovery would be left intact and reported to the authorized BLM officer. BHM would not resume surface disturbance at the discovered location, until the reported location is released by the authorized BLM officer.

Cultural Resources

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

- BHM would not knowingly disturb, alter, injure, or destroy any historical or archaeological site, structure, building, or object. If BHM discovers any cultural resource that might be altered or destroyed by operations, the discovery would be left intact and reported to the authorized BLM officer. BHM would not resume surface disturbance at the discovered location, until the reported location is released by the authorized BLM officer.

- All previous cultural surveys conducted in the Project Area are more than ten years old. In order to prevent impacts to known cultural sites, BHM would avoid all known cultural sites within the Project Area. In order to avoid known cultural sites, BHM would submit an annual work plan to the BLM. BHM would ensure that known cultural sites within the area of proposed phase surface disturbance are mapped by a qualified cultural resource specialist with a GPS unit prior to surface disturbance, and a summary report of that mapping would be provided to the BLM by the cultural resource specialist. The BLM would review the proposed locations of the surface disturbance and notify BHM if the locations overlap with any cultural site. If a cultural site is located within the area of proposed surface disturbance, the identified cultural site(s) would be avoided or re-evaluated.

Native American Concerns

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

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

Erosion and Sediment Control

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

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

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

Fire Management

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

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

    - All vehicles should carry fire extinguishers.
    - Adequate fire fighting equipment (i.e., shovel, Pulaski, extinguishers), and/or an ample water supply should be kept at each drill site.
    - Vehicle catalytic converters should be inspected often and cleaned of brush and grass debris.
    - When conducting welding operations, they should be conducted in an area free from or mostly free from vegetation. An ample water supply and shovel should be on hand to extinguish any fires created from the sparks. Extra personnel should be at the welding site to watch for fires created by welding sparks.
    - Report wildland fires immediately to the BLM Central Nevada Interagency Dispatch Center at (775) 623-3444.
    - When conducting operations during the months between May and September, the operator must contact the BLM MLFO, Division of Fire and Aviation at (775) 635-4000 to find out about any fire restrictions in place for the area of operation and to advise this office of approximate beginning and ending dates for your activities.

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

Solid Wastes

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

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

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

Noxious Weeds, Invasive and Nonnative Species

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

- To eliminate the transport of vehicle-borne noxious weed seeds, roots, or rhizomes all vehicles and heavy equipment used for the completion, maintenance, inspection, or monitoring of ground disturbing activities, for emergency fire suppression, or for authorized off-road driving within the Project Area would be free of soil and debris capable of transporting weed. All such vehicles and equipment would be cleaned with high power or high pressure equipment prior to entering or leaving the Project Area. Vehicles used for emergency fire suppression would be cleaned as part of check-in and demobilization procedures. Cleaning efforts would concentrate on tracks, feet and tires, on the undercarriage. Special emphasis would be applied to the axels, frames, cross members, motor mounts, on and underneath the steps, running boards, and front bumper/brush guard assemblies. Vehicle cabs would be swept out and refuse would be disposed of in waste receptacles. Cleaning sites would be recorded using global positioning systems or other mutually acceptable equipment and provided to the MLFO weed coordinator or designated contact person.

Migratory Birds

- In order to avoid potential impacts to breeding migratory birds (including golden eagles [*Aquila chrysaetos*]), a survey would be conducted by a qualified biologist within potential breeding habitat prior to any surface disturbance associated with exploration activities during the avian breeding season (March 1 through August 31 for raptors and April 1 through August 1 for other avian species). The nest survey for golden eagles would extend beyond the area of proposed surface disturbance to any potential nesting habitat in the Project Area that is within line-of-sight of the proposed surface disturbance. If nests are located, or if other evidence of nesting (i.e., mated pairs, territorial defense, carrying nest material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) would be delineated and the buffer area avoided to prevent destruction or disturbance to nests until they are no longer active. The site characteristics to be used to determine the size of the buffer area are as follows: a) topographic screening; b) distance from disturbance to nest; c) the size and quality of foraging habitat surrounding the nest; d) sensitivity of the species to nest disturbances; and e) the protection status of the species. The start and end dates of the seasonal restriction may be altered based on site-specific information such as elevation and winter weather and the presence of the species.

Pygmy Rabbits

- In order to avoid potential impacts to pygmy rabbits, BHM would ensure that a one-time survey for pygmy rabbits would be conducted by a qualified biologist within potential habitat in the Project Area prior to any surface disturbance associated with exploration activities. If pygmy rabbits (i.e., individuals, burrows, or sign) are located, BHM would notify the BLM and a protective buffer would be delineated.

Public Safety

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

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

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

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

Survey Monuments

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

Water Quality

- In order to avoid potential impacts to perennial water resources within the Project Area, BHM would avoid direct impacts to the springs by 300 feet within the Project Area.

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

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

- BHM would follow the Spill Prevention Plan.

Land Use and Access

- BMH would avoid impacts to access along the rights-of-way (ROWs) that lead to the communication site on Prospect Peak (Figure 1.1.2).

2.2 No Action Alternative

In accordance with BLM NEPA guidelines H-1790-1, Chapter V (BLM 1988), the EA evaluates the No Action Alternative, which, based on the above discussion, is the only reasonable alternative to the Proposed Action. The objective of the No Action Alternative is to describe the

environmental consequences that would result if the Proposed Action were not implemented. The No Action Alternative forms the baseline from which the impacts of all other alternatives can be measured.

Under the No Action Alternative, the Proposed Action would not be approved by the BLM; however, the area would remain available for other multiple use activities as approved by the BLM and exploration in the Project Area would continue under the limits of the two approved Notices and could total no more than ten acres.

2.3 Alternatives Considered but Eliminated from Detailed Study

2.3.1 Cross Country/Overland Travel Alternative

This alternative would utilize only overland or cross country travel and would not allow for construction of new roads. Utilization of cross country exclusively for the Project would eliminate much of the exploration due to the presence of mountain shrub, piñon-juniper woodlands, and sagebrush vegetation communities which would not permit the passage of Project-related equipment. This alternative does not meet the purpose and need of the Proposed Action, which is to fully evaluate the mineral potential in the Project Area as allowed under the General Mining Law of 1872, as amended, because exploration of the mineralization in this area is difficult and requires numerous drill holes in order to evaluate the geologic and mineral potential. 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. This alternative does not meet the purpose and need of the Proposed Action because exploration of the lithologically controlled deposits in this area is difficult and requires numerous drill holes and trenches in order to evaluate the geologic and mineral potential. An alternative that eliminates access to portions of the exploration area would deny the claimant the opportunity to fully evaluate and characterize the mineral potential. However, the Proposed Action incorporates the use of existing roads to maximum extent possible.

2.3.3 Helicopter Drilling Alternative

This alternative would involve conducting exploration by using a helicopter to access the entire Project Area rather than construct roads. This would involve slinging or transporting a drill rig, fuel, supplies, laborers for pad construction, and drilling personnel via helicopter to all of the proposed drill sites. Water for drilling purposes would either need to be pumped to the site via water lines using diesel generators and pumps or by slinging water to the drill site. All personnel would be ferried to the drill site from staging areas via helicopter or they would have to hike to the drill sites from the existing roads. All drill samples would have to removed from the drill sites with the use of a helicopter. New surface disturbance would still result from this alternative from construction of all the drill sites, the exploration drilling that occurred on existing roads, and from the development of staging areas.

The Helicopter Drilling Alternative for the entire Project Area was considered but eliminated from full analysis for several reasons. First, helicopter drilling for the entire Project Area would

not meet the purpose and need of the Proposed Action because at the present time, helicopters support only core rigs. Most of the activities under the Proposed Action would need to be conducted by high-production reverse circulation drill rigs, which are not helicopter supported. In addition, helicopter drilling would take substantially longer to obtain the same geologic data and could also require more drill holes, resulting in more disturbance and potential impacts to natural resources. Many of the proposed drill sites have existing road access and are not located in sensitive habitats or on steep terrain that can only be accessed by helicopter.

Additionally, a number of roads within the Project Area have already been constructed under Notice-level activities and previous operators. Therefore, helicopter drilling for all the drill sites throughout the Project Area would not provide any environmental benefit over the Proposed Action.

3 AFFECTED ENVIRONMENT

3.1 Introduction

The purpose of this section of the EA is to describe the existing environment of the Project Area affected by the Proposed Action or alternative under consideration. Supplemental Authorities (formerly, critical elements of the human environment) that are subject to requirements specified by statute or executive order must be considered in all BLM environmental documents. The 18 supplemental authorities were considered by the BLM ID team during the Project's scoping meeting. Table 3.1-1 lists the Supplemental Authorities and their status in the Project Area as well as the rationale to determine whether a Supplemental Authority present in the Project Area would be affected by the Proposed Action. Supplemental Authorities that may be affected by the Proposed Action are analyzed in Chapter 4. This EA incorporates by reference the EA prepared for Alta Gold Company's Lookout Mountain Exploration Project (NV63-EA98-66) prepared in March 1999.

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

Supplemental Authority	Not Present	Present/ Not Affected	Present/ May be Affected	Rationale/Reference Section
Air Quality			X	See Section 3.2.
Areas of Critical Environmental Concern	X			Resource is not present.
Cultural Resources			X	See Section 3.3.
Environmental Justice		X		See Section 3.15.
Fish Habitat	X			Resource is not present.
Floodplains	X			Resource is not present.
Forest and Rangelands			X	For vegetation, see Section 3.17. For grazing management, see Section 3.13.
Health and Human Safety		X		Under Executive Order (EO) 13045, children are protected from environmental health and safety risks. In accordance with EO 13045, the Project would not use pesticides or herbicides. Therefore, the Project poses no health and human safety risk, and health and human safety is not further addressed in this EA.
Noxious Weeds and Invasive, Nonnative Species			X	See Section 3.4.
Migratory Birds			X	See Section 3.5.1.
Native American Concerns			X	See Section 3.6.
Prime or Unique Farmlands	X			Resource is not present.
Threatened or Endangered Species (Plants and Wildlife)	X			Resource is not present.
Wastes, Hazardous or Solids			X	See Section 3.7.

Supplemental Authority	Not Present	Present/ Not Affected	Present/ May be Affected	Rationale/Reference Section
Water Quality (Surface and Ground)			X	See Section 3.8.
Wetlands and Riparian Zones			X	See Section 3.18.
Wild and Scenic Rivers	X			Resource is not present.
Wilderness	X			Resource is not present.

In addition to the supplemental authorities of the human environment, the BLM considers other resources and uses that occur on public lands and the issues that may result from the implementation of the Proposed Action. Other resources or uses of the human environment that have been considered for this EA are listed in Table 3.1-2 below. Resources or uses that may be affected by the Proposed Action or No Action Alternative are further considered in the EA.

Table 3.1-2: Resources or Uses Other Than the Supplemental Authorities

Other Resources	Not Present	Present/ Not Affected	Present May be Affected	Rationale/Reference Section
Fire Management			X	See Section 3.9.
Grazing Management			X	See Section 3.13.
Land Use, Access, Public Safety, and Recreation			X	See Section 3.12.
Geology and Minerals			X	See Section 3.10.
Paleontological Resources			X	See Section 3.11.
Socioeconomic Values			X	See Section 3.14.
Soils			X	See Section 3.16.
Special Status Species (Plants and Wildlife)			X	See Sections 3.5 and 3.17.1.
Vegetation			X	See Section 3.17.
Visual Resources			X	See Section 3.19.
Wild Horses and Burros			X	See Section 3.20.
Wildlife			X	See Section 3.5.

3.2 Air Quality

The Project Area is located in the higher elevations of the Fish Creek Range. The climate and vegetation in the Project Area are typical of the higher elevation environment of the northern Basin and Range Province. The climate receives moderate levels of precipitation, with moderate fluctuations in seasonal temperatures, and the average annual precipitation is 11.84 inches. Temperatures during the winters are cool with periods of very cold weather. The average maximum and minimum temperatures in Eureka, which is approximately eight miles north of the Project Area, are 60.5 and 33 degrees Fahrenheit (˚F) (WRCC 2009). Elevation ranges in the Project Area ranges between 6,860 to 8,770 feet amsl.

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

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

3.3 Cultural Resources

Per the BLM's request, ASM Affiliates, Inc. (ASM) conducted fieldwork between June 13 and 17, 2010, in order to relocate archaeological sites recorded in 1992 by Mariah Associates and in 1995 by Archaeological Research Services within the Project Area and to evaluate the mapped locations and boundaries of these sites with the use of GPS technology. Records and literature searches for the Project Area were conducted at the Nevada State Museum, Carson City, the NVCRIS Map Service website, the W. M. Keck Earth Sciences and Mining Research Information Center web page, public lands records available online and the MLFO.

ASM searched for 22 known archaeological sites within the Project Area to determine the accuracy of previous location data. Three sites turned out to be smaller than their previously mapped extent. Fieldwork relocated one site which was previously recorded 100 meters from its actual location. Two sites could not be relocated. Although all other sites varied in position and/or size to some degree with respect to their previously recorded locations, the site locations were found to generally overlap with the original location data. All of the relocated sites have been affected by slope wash, erosion, and sedimentation and all except two of the sites are generally in good condition and have good horizontal integrity. The exceptions are two sites which have been bisected by a new road alignment that removed a portion of the site and is adding to sedimentation through berm erosion, and one site which has been subject to severe water erosion and road construction activities.

3.4 Noxious Weeds, Invasive and Nonnative Species

The BLM defines a noxious weed as, “a plant that interferes with management objectives for a given area of land at a given point in time.” The MLFO Battle Mountain District recognizes the current noxious weed list designated by the State of Nevada Department of Agriculture statute, found at http://agri.nv.gov/nwac/PLANT_NoxWeedList.htm. An invasive species is defined as a non-native or alien plant or animal that has entered into an ecosystem. Invasive species are likely to cause economic harm or harm to human health (Executive Order 13112). Noxious weeds, invasive and nonnative species are highly competitive, aggressive and easily spread. The Battle

Mountain District has developed an Integrated Weed Management Plan for the entire Battle Mountain District. In addition, the BLM follows all Federal Noxious and Invasive Weed Laws, Executive Order 11312 (Prevention and Control of Invasive Species); various BLM Manuals and NRS and NAC Chapter 555.

Cheatgrass (*Bromus tectorum*), an invasive, nonnative species may occur within the Project Area. Surveys conducted within the Project Area in the past identified musk thistle (*Carduus nutans*) and hoary cress (*Cardaria* sp.) along most of the existing roads in the Project Area. The infestations may have spread since surveys were conducted. Musk thistle is considered a Category "B" weed by the Nevada Department of Agriculture (NDA). Category "B" weeds are required by the NDA to be controlled in areas where populations are previously known to occur (NDA 2009). Hoary cress is a Category "C" weed and abatement is at the discretion of the state quarantine officer (NDA 2009).

3.5 Wildlife (including Migratory Birds and Special Status Species)

Wildlife habitats in the Project Area are typical of those associated with the mountain shrub, piñon-juniper woodland, and sagebrush vegetation communities (NRCS 2009) found throughout the northern Great Basin. The Project Area provides plentiful wildlife habitat directly attributable to the variety of soils, vegetation communities, and topographic features of the area. The mountain shrub vegetation community provides cover, nest sites, and foraging opportunities. The overstory tends to be sparser than the thick canopy often found in piñon-juniper woodland; thus, the understory often supports a variety of forbs, grasses, and shrubs. Piñon-juniper woodlands provide a variety of sheltering functions for wildlife. The evergreen overstory provides thermal protection for wildlife in the winter and shelter from the sun in the summer. Sagebrush provides habitat for various Great Basin wildlife species and supports a high diversity or density of wildlife species.

The Project Area is composed of mountains and canyons, which have resulted in several ephemeral drainages and springs within the Project Area. The springs include an unnamed spring in the northern portion of the Project Area and Ratto Spring and Sierra Spring in the central portion of the Project Area. No perennial streams, or fish habitat occur in the Project Area. An open pit mine, pre-1981 roads, permitted roads, and permitted drill sites exist in the Project Area. Areas of native vegetation occur between the segments of existing pre-1981 roads, permitted roads, and permitted drill sites.

The Nevada Department of Wildlife (NDOW) was contacted regarding the presence of wildlife species within and near the Project Area. The NDOW identifies that American kestrels (*Falco sparverius*) would be present in the Project Area. American kestrels would utilize the entire Project Area for foraging and nesting.

According to the NDOW, game species that may utilize the Project Area include mule deer (*Odocoileus hemionus*), mountain lion (*Puma concolor*), chukar (*Alectoris chukar*), and greater sage-grouse (*Centrocercus urophasianus*). The Project Area is located in the NDOW Deer Management Area 14, Unit 145. Mule deer from Unit 144, north of United States Highway 50 and the town of Eureka, migrate to the Project Area from the Diamond Mountains. The NDOW identifies that mule deer utilize the Project Area and vicinity primarily as winter range. Mule deer winter within the Project Area during milder winters when snow depths are low. During

winters with heavy snow fall, mule deer would remain in the Project Area until deep snow forces them to leave. A few mule deer would reside in the Project Area during the summer months.

Mountain lions (*Puma concolor*) may occur within the Project Area since mule deer are the primary prey for mountain lions. Other mammalian predators that inhabit or are likely to inhabit the area include bobcat (*Felis rufus*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), badger (*Taxidea taxus*), shorttail weasel (*Mustela erminea*), longtail weasel (*Mustela frenata*), striped skunk (*Mephitis mephitis*), and spotted skunk (*Spilogale gracilis*) (BLM 1999).

Several game bird species also inhabit the area. According to the NDOW, greater sage-grouse (*Centrocercus urophasianus*) may be present within the Project Area. The Project Area is located within greater sage-grouse summer range. Greater sage-grouse would utilize the sagebrush vegetation communities within the Project Area; however, this species has not been documented within the Project Area.

Dusky grouse (*Dendragapus obscurus*) have been observed in the aspen, pine, and mahogany stands at the upper elevations just north of the Project Area. Chukar (*Alectoris chukar*) and California quail (*Callipepla californica*) may occur in low numbers in or near the Project Area. According to the NDOW, chukar may be present in the Project Area. Chukar would utilize rocky slopes within the sagebrush vegetation communities where water is available for foraging and nesting.

Small mammals and birds are the prey base for the raptors and other predators that inhabit the area. Species of small mammals observed in the Project Area include golden-mantled ground squirrels (*Spermophilis lateralis*), least chipmunks (*Tamius minimus*), black-tailed jackrabbits (*Lepus californicus*), and cottontail rabbit (*Sylvilagus nuttallii*). A variety of shrews and rodents occur in the many habitats within the Project Area (BLM 1999).

The only reptile observed on site during wildlife surveys was the Great Basin fence lizard (*Sceloporus occidentalis biseriatus*) however, several other lizards and snakes are likely to occur in the variety of habitats in the Project Area (BLM 1999). The limited amount of perennial water on site reduces the likelihood of large populations of amphibians, but the Great Basin spadefoot (*Spea intermontana*) or the Western toad (*Bufo boreas*) are likely to occur in low numbers.

3.5.1 Migratory Birds

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

Approximately 400 bird species have been reported in Nevada with more than 240 species recorded as breeding in the state. The species of migratory birds known to have a distribution that overlaps with the Project Area, according to the Nevada Breeding Bird Atlas, are listed in Table 3.5-1 (GBBO 2005).

The Project Area could provide foraging as well as nesting habitat for raptors and passerine species of migratory birds.

Table 3.5-1: Migratory Bird Species with Breeding Distributions that Overlap with the Project Area

Common Name	Scientific Name	PIF[1] "Long term Planning and Responsibility Species"	NVPIF[2] "Priority Species"	Habitat Associations
Black-throated gray warbler	***Dendroica nigrescens***	**Yes**	**Yes**	**Found primarily in piñon-juniper woodlands and less often in mountain mahogany and riparian woodlands in Nevada.**
Black-throated sparrow	***Amphispiza bilineata***	**Yes**	**No**	**Found in Mojave scrub, salt desert scrub, sagebrush, piñon-juniper woodlands, and Joshua tree. Nest in forked branches of shrubs.**
Brewer's sparrow	***Spizella breweri***	**No**	**No "Management"**	**Found in sagebrush. Nest in sagebrush, spiny hopsage, rabbitbrush, and bitterbrush.**
Cassin's finch	***Carpodacus cassinii***	**No**	**No "Management"**	**In Nevada, primarily found in piñon-juniper and mountain mahogany woodlands. Also in aspen-mixed conifer woodlands.**
Ferruginous hawk*	***Buteo regalis***	**No**	**Yes**	**Found in wide-open sagebrush country, piñon-juniper, and cliffs in Nevada. Nest on cliff ledges, rock pillars, isolated trees, power poles, and edges of piñon-juniper woodlands.**

Common Name	Scientific Name	PIF[1] "Long term Planning and Responsibility Species"	NVPIF[2] "Priority Species"	Habitat Associations
Gray flycatcher	***Empidonax wrightii***	**Yes**	**Yes**	**Found in tall sagebrush and bitterbrush stands and the sagebrush shrubland/piñon juniper transitional zone. Nest in tall sagebrush or conifers.**
Green-tailed towhee	***Pipilo chlorurus***	**Yes**	**No**	**Found in mixed-species shrublands of intermediate and higher elevations, including piñon/juniper woodlands, montane sagebrush steppe, and aspen. Nest on or near the ground under dense shrub cover.**
Juniper titmouse*	***Baeolophus ridgwayi***	**No**	**Yes**	**Found in piñon-juniper woodlands in Nevada.**
Loggerhead shrike*	***Lanius ludovicianus***	**No**	**Yes**	**Found in Mojave scrub, Joshua tree, salt desert scrub, sagebrush, lowland riparian, and montane riparian.**
Mountain bluebird	***Sialia currucoides***	**Yes**	**No**	**Found in coniferous forest edges, open woodlands, and in the transitional area between piñon-juniper woodlands and sagebrush.**
Piñon jay*	***Gymnorhinus cyanocephalus***	**No "Management"**	**Yes**	**Found in piñon-juniper, sometimes sagebrush, and Joshua tree.**
Red-breasted sapsucker	***Sphyrapicus ruber***	**Yes**	**No**	**Found in aspen and coniferous forest in Nevada.**

Common Name	Scientific Name	PIF[1] "Long term Planning and Responsibility Species"	NVPIF[2] "Priority Species"	Habitat Associations
Sage sparrow	***Amphispiza belli***	**Yes**	**Yes**	**Found in big sagebrush and associated shrub species. Nest close to and on the ground under shrubs or in grass tufts.**
Sage thrasher	***Oreoscoptes montanus***	**Yes**	**Yes**	**Found in big sagebrush stands, in greasewood flats, and montane sagebrush steppe. Nest on the ground or in the shrub canopy, depending on greatest overhead cover.**
Short-eared owl*	***Asio flammeus***	**No**	**Yes**	**Found in wet meadows, sagebrush, and salt desert. Nests are on the ground under vegetative cover.**
Swainson's hawk*	***Buteo swainsoni***	**No**	**Yes**	**Found in open fields, open sagebrush, and wet meadows with native bunchgrasses.**
Vesper sparrow*	***Pooecetes gramineus***	**No**	**Yes**	**Found in sagebrush steppe and dry-grassland associated species during breeding. Nest on the ground under vegetative cover.**
Western scrub jay	***Aphelocoma californica***	**Yes**	**No**	**Found in piñon-juniper and less often in lower-elevation riparian areas in Nevada.**

Source: GBBO 2005.
[1]Partners in Flight
[2]Nevada Partners in Flight
*BLM Sensitive Species

Mourning dove (*Zenaida macroura*), a migratory bird and resident game species, occur throughout the area, nesting in trees or tall mountain shrubs and foraging near springs (BLM 1999).

3.5.2 Special Status Wildlife Species including Threatened and Endangered Species

Special status species include species listed as threatened, endangered, proposed, and candidate by the Endangered Species Act of 1973, as amended (ESA), BLM sensitive species, and delisted species for five years after delisting.

In response to a request for identification of federally-listed species in the Project Area, the United States Fish and Wildlife Service (USFWS) memorandum of September 8, 2009, stated that no federally-listed wildlife species are known to occur in the Project Area; therefore, federally-listed species are not addressed further in this EA.

The USFWS identified potential habitat for pygmy rabbit (*Brachylagus idahoensis*), a BLM sensitive species, within the Project Area. Pygmy rabbit typical habitat consists of dense stands of big sagebrush growing in deep loose soils that are deeper than 20 inches, have at least 13 to 30 percent clay content, and are light colored and friable. Pygmy rabbit habitat is generally on flatter ground or moderate slopes in Wyoming big sagebrush uplands, Basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*) drainages, and in ephemeral drainages in between ridges of low sagebrush (*Artemisia arbuscula*) (Ulmschneider 2004).

The NDOW identified BLM sensitive raptor, bat, and game species occurring within or adjacent to the Project Area. According to the NDOW ferruginous hawk (*Buteo regalis*), golden eagle, Swainson's hawk (*Buteo swainsoni*), long-eared owl (*Asio otus*), and short-eared owl (*Asio flammeus*) may be present within the Project Area. These species are protected under state and federal laws and are BLM sensitive species. Potential nesting and foraging habitat for golden eagles is located in the Project Area. South of the Project Area is a heavy concentration of ferruginous hawk nests. Ferruginous hawks nest at the edge of piñon-juniper woodland and sagebrush steppe and forage over the open sagebrush steppe. There is suitable nesting and foraging habitat for ferruginous hawks within the Project Area and ferruginous hawks may colonize areas within the Project Area that have been edge effected by construction of exploration roads and drill pads. Nesting and foraging habitat are available within the Project Area for golden eagle, Swainson's hawk, long-eared owl, and short-eared owl.

According to the NDOW, greater sage-grouse, a BLM sensitive species and USFWS candidate species, may occur within the Project Area. This species is analyzed in Section 3.5 above.

The NDOW identified seven species of bats that occur within the Project vicinity or near the Project Area. Townsend's big-eared bat (*Corynorhinus townsendii*) and western small-footed myotis (*Myotis ciliolabrum*) occur in the Project vicinity. Big brown bat (*Eptesicus fuscus*), California myotis (*Myotis californicus*), long-eared myotis (*Myotis evotis*), little brown bat (*Myotis lucifugus*), and long-legged myotis (*Myotis volans*) are known to occur in the area. The Project Area may provide roosting and foraging habitat for all seven of the bat species listed above. Townsend's big-eared bat, western small-footed myotis, big brown bat, California myotis, and long-eared myotis are cavern dwellers and may roost in the limited number of shafts, adits, and buildings constructed during previous mining operations within the Project Area. Little brown bat and long-legged myotis may roost in hollow trees within the Project Area. Forest openings around Ratto Spring and Sierra Spring may provide foraging habitat for all seven of the bat species listed above.

Potential habitat for the following BLM sensitive migratory bird species have been identified in the Project Area: ferruginous hawk; juniper titmouse; loggerhead shrike; piñon jay; short-eared owl; Swainson's hawk; and Vesper sparrow.

3.6 Native American Concerns

Located within the traditional territory of the Western Shoshone, the MLFO administrative boundary contains spiritual, traditional, and cultural resources, sites, and social practices that aid in maintaining and strengthening social, cultural, and spiritual integrity. Recognized tribes with known interests within the BLM MLFO administrative boundary are as follows: the Te-Moak Tribe of Western Shoshone (Elko, South Fork, Wells, and Battle Mountain Bands), Duck Valley Sho-Pai Tribes of Idaho and Nevada, Duckwater Shoshone Tribe, Ely Shoshone Tribe, Yomba Shoshone, Timbisha Shoshone. In addition, there are various other community members and individuals that have known interests within the BLM MLFO administrative boundary.

Though archaeological data and theory states that the Western Shoshone (Newe) began to inhabit the Great Basin area around 600 years ago, contemporary Western Shoshone contend they were here since time immemorial. Social activities that define the culture took place across the Great Basin. Pine nut gathering, edible and medical plant gathering, hunting and fishing, spiritual/ceremonial practices, and trade occurred as the native peoples practiced a hunting and gathering lifestyle. The native cultures appeared to be heavily impacted by social, cultural, and environmental change, which rapidly accompanied the nonnative migration from east to west. The Western Shoshone and other Great Basin tribes continued to practice certain cultural, spiritual, and traditional activities, visited their sacred sites, hunted game, and gathered the available medicinal and edible plants. Through oral history and the practice of handing down knowledge from the elders to the younger generations, some Western Shoshone continue to maintain a world view similar to that of their ancestors.

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

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

On October 6, 2009, consultation initiation/invitation letters were mailed from the BLM MLFO Battle Mountain District Office to the following: Duckwater Shoshone Tribe; Te-Moak Tribe of Western Shoshone and the Battle Mountain Band; Yomba Shoshone Tribe; and Ely Shoshone Tribe. Native American consultation continues with a field visit being scheduled with the Duckwater Shoshone Tribe once weather and road conditions allow. Specific sites, activities, and resources that may exist within or in close proximity to the Project boundary are unknown at this time.

3.7 Wastes, Hazardous or Solid

Hazardous materials used in the Project Area include fuels used to operate equipment associated with Project activities. 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. Only nontoxic drilling fluids (i.e., Enviroplug coarse, abantonite, alcomer, cement, bentonite, EZ-mud, and superplug) would be utilized in the drilling process.

3.8 Water Quality

3.8.1 Surface Water

Surface water within the Project Area is limited to seeps and springs with meadow associations including an unnamed spring in Section 16, T18N, R53E and Ratto Spring and Sierra Spring in Section 27, T18N, R53E. No major water drainages lie within the Project Area. Localized drainages consists of intermittent flows, and water flows in response due to spring snowmelt and infrequent precipitation events. Runoff from the mountain slopes is rapid and infiltrates into the soil quickly (BLM 1989).

The Project Area receives an average of six to ten inches of precipitation which falls mainly as winter snow and locally intense summer thunderstorms. Most precipitation in central Nevada is from frontal storms mainly from the north and west during the winter months and convectional storms during the summer months. Frontal storms are generally low intensity, short duration events covering large areas. Convective storms are generally high-intensity thunderstorms, and are brief and have limited aerial extent (BLM 1989).

3.8.2 Ground Water

Natural recharge of ground water resources is by infiltration of precipitation that falls on the surface, by runoff generated from the Fish Creek Range, by movement of ground water from consolidated rocks into the alluvial basin-fill deposits, and from surface water sources such as streams and rivers. Precipitation and snowmelt runoff from the slopes of the Fish Creek Range is rapid, moving across the alluvial fan where much of it infiltrates the soil, and into the alluvial aquifers within the valley. Some surface water may percolate into a deeper aquifer.

3.9 Fire Management

The BLM has an ongoing fuels reduction project (i.e., Fish Creek Hazardous Fuels Reduction Project), which is located adjacent to the Project Area and measures approximately 1,000 acres.

This action is being conducted under the Health Forest Initiative Categorical Exclusion authority for hazardous fuels reduction projects.

3.10 Geology and Minerals

The general geology of the Project Area consists dominantly of a thick section of Paleozoic sedimentary rocks ranging in age from Cambrian to Devonian. The strata consist of quartzite, limestone, dolomite, shale, and minor sandstone. Intrusive rocks in the area include Cretaceous and Tertiary felsic dikes and small plutons. Tertiary volcanic rocks are locally present and unconformably overlie the sedimentary sequence. Late Tertiary to Quaternary gravel, Quaternary colluvium, and lesser alluvium overlie the bedrock units locally (BLM 1999).

3.11 Paleontological Resources

The BLM manages paleontological resources under a number of federal laws including the following: FLPMA Sections 310 and 302(b), which direct the BLM to manage public lands to protect the quality of scientific and other values; 43 CFR 8365.1-5, which prohibits the willful disturbance, removal, and destruction of scientific resources or natural objects; 43 CRF 3622, which regulates the amount of petrified wood that can be collected for personal, noncommercial purposes without a permit; and 43 CFR 3809.420 (b)(8), which stipulates that a mining operator "shall not knowingly disturb, alter, injure, or destroy and scientifically important paleontological remains or any historical or archaeological site, structure, building or object on Federal lands." The Paleontological Resources Preservation Act (PRPA) was passed in March 2009 and was part of the Omnibus Public Lands Act.

Of the formations described in Section 3.10, the Devonian-age Bartine formation, Ordovician-age Pogonip group, and the Cambrian-age Dunderberg shale have been identified as containing paleontological resources. However, there are no known occurrences of significant fossils (i.e., vertebrates) within any of these units, and the possibility of their presence is extremely low. The primary reasons for this assessment are that: 1) formations are Cambrian through Devonian, a time when there were very few vertebrates on a world-wide basis, and there are no known records of any Ordovician vertebrates (ostracoderms) from Nevada; and 2) the depositional environment of the formations is predominantly deep marine, which is not the environment of early vertebrates. The Pogonip Group is highly fossiliferous, containing a diversified marine invertebrate assemblage. Coates (1987) and Nolen (1962) note the presence of trilobites, brachiopods, gastropods, and conodonts. Limestone beds in the Dunderberg Shale are also highly fossiliferous and have yielded large and varied invertebrate fauna of Late Cambrian age. Similar fossils have been recorded from many other localities in eastern Nevada (Nolen 1962).

The Cretaceous and Tertiary rocks would not contain paleontological resources because they are intrusive rather than sedimentary. The overlying gravel, colluvium, and alluvium of Tertiary- to Quaternary-age do have potential for some significant paleontological resources; however, no paleontological resources of critical scientific or educational value are known to occur within the Project Area (BLM 1999).

3.12 Land Use, Access, Public Safety, and Recreation

The Eureka County 1973 General Plan, updated in 2000, contains a description of local land uses, restrictions on development, and recommendations for future land use planning, which

designates the Project Area as Public Rangeland. The current land use is livestock grazing, mineral exploration, dispersed recreation, and wildlife habitat. Two ROWs (N002472 and N005256), associated with access to a communications site on Prospect Peak are located in the Project Area and measure 50 feet wide (Figure 1.1.2).

The Project Area is crosscut by numerous pre-1981 roads. An open pit that was excavated by a previous mining company and three waste dumps are located in the Project Area. The Project Area is located within a pine nut sale and a Christmas tree sale area.

The Project is accessed south of the town of Eureka, Nevada, from U.S. Highway 50 via the Windfall Mine Road (County Maintained Road G-204) to the Windfall Cutoff Road (County Maintained Road G-204B). Secondary access to the Project Area is from U.S. Highway 50, south of Eureka, via State Route 379 to the Ratto Canyon Road (County Maintained Road G-204A). As described in Section 2.1.3, current county maintenance activities on county maintained roads G204, G-204A, and G-204B include, but are not limited to, repairs to damage caused by natural or other causes, maintenance or replacement of unsafe structures, snow removal, maintaining the shape of the road to perpetuate drainage, blading the road, and keeping drainage ditches open and operational. BHM has entered into a MOU with the County of Eureka Board of Commissioners to ensure adequate maintenance standards are met by the ERCD. BHM is not proposing any changes or alterations to existing access roads outside of the Project Area.

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

3.13 Grazing Management

The Project Area is located within three grazing allotments where cattle and sheep are grazed. The southern half of the Project Area lies within Fish Creek North Use Area of the Fish Creek Ranch Allotment. The Fish Creek North Use Area is approximately 47,530 acres with a total of 888 active cattle Animal Unit Months (AUMs) (approximately 53 acres per AUM) available from April 1 through May 15. The northern portion of the Project Area is within the Arambel Allotment. The Arambel Allotment is utilized for sheep and consists of 45,526 acres of public land and is presently managed for approximately 1,349 AUMs (approximately 34 acres per AUM) annually from April 15 through October 31. A small area in the northeastern portion of the Project Area is within the Ruby Hill Allotment. The Ruby Hill Allotment contains approximately 14,659 acres of public land and is presently managed for 1,286 active AUMs (approximately 11 acres per AUM) annually. The Ruby Hill Allotment is utilized by cattle for approximately 275 AUMs annually from March 16 through August 29. The Ruby Hill Allotment is utilized by sheep for approximately 1,011 AUMs annually from May 1 through September 30. An AUM represents the amount of forage required to support one cow and her calf for one month.

Surface water sources within the Project Area consist of a small trench at Sierra Springs and a stock pond approximately 20 feet in diameter at Ratto Springs which is used by local ranchers to water their livestock. Both Sierra Springs and Ratto Springs are located in Section 27, T18N, R53E, in the central portion of the Project Area.

3.14 Socioeconomic Values

The Project Area is located in Eureka County approximately eight miles south of the town of Eureka, Nevada.

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

The total population of Eureka County in 2008 was estimated to be 1,553, which was a decrease of ten percent since 1999 (population 1,726) (State of Nevada 2009a). The majority of the County's residents live in the unincorporated town and county seat of Eureka eight miles north of the Project Area while the balance of county residents live primarily in Crescent Valley and Beowawe in northern Eureka County. The population in the town of Eureka in 2008 was estimated to be 473 (State of Nevada 2009a). The town of Eureka provides a variety of retail, restaurant, and lodging options as well as recreational facilities and government services.

Mining is the major economic activity in Eureka County. Agriculture also plays a vital role in the county's economy.

The median household income in Eureka County in 2006 was $57,500 annually (State of Nevada 2009b). The majority of job-related income is derived from the mining sector (State of Nevada 2009b). The unemployment rate in Eureka County was 8.3 percent in August 2009, which was 4.7 percent lower than the State of Nevada as a whole at 13.0 percent (State of Nevada 2009b).

3.15 Environmental Justice

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

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

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

- The minority population of the affected area exceeds 50 percent; or

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

Neither population of American Indians, Hispanics, Blacks, Asians, or Pacific Islanders exceed 50 percent of the population for Eureka County. Although persons of American Indian heritage constitute a higher percentage of the total population within Eureka County than the minority population in the State of Nevada, the Project Area is located on BLM-administered lands and private lands in predominantly vacant and rural areas. Since the Project Area is undeveloped and unpopulated, the minority population is not meaningfully greater than the percentage for the State of Nevada as a whole. Therefore, for the purposes of screening for environmental justice concerns, the identified populations defined in EPA's guidance (EPA 1998) do not exist within the Project Area.

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

3.16 Soils

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

Table 3.16-1: Soil Series within the Project Area

Association	Soil Series	Range in Depth to Hardpan	Landscape position/ % Slope	Profile Soil Texture	Permeability	Erosion Hazard by Water	Erosion Hazard by Wind
Labshaft-Winu (471)	Labshaft	Ten to 20 inches	Middle and upper side slopes of mountains; 15 to 50%	Very stony loam	Moderately slow	Moderate	Low
	Winu	24 to 40 inches	Middle and lower side slopes of mountains; 15 to 30%	Gravelly loam	Moderately slow	Moderate	Low
t-Haunchee -Rock outcrop (451)	Foxmount	24 to 40 inches	Side slopes of mountains; 15 to 50%	Loam	Moderate	Moderate	Moderate

Association	Soil Series	Range in Depth to Hardpan	Landscape position/ % Slope	Profile Soil Texture	Permeability	Erosion Hazard by Water	Erosion Hazard by Wind
	Haunchee	Ten to 20 inches	Crests and upper side slopes of mountains; 30 to 75%	Very gravelly loam	Moderate	Moderate	Low
	Rock outcrop	Zero inches	Crests of mountains; 15%	NA	NA	Moderate	Low
Hopeka-Solak-Ados (330)	Hopeka	Four to ten inches	Side slopes; 15 to 50%	Very gravelly loam	Moderate	Moderate	Low
	Solak	Four to ten inches	Ridgetops, upper side slopes; Zero to ten%	Very gravelly loam	Moderate	Moderate	Low
	Ados	Four to 15 inches	Lower part of side slopes; Four to 15%	Gravelly loam	Moderate	Moderate	Low
Hymas-Ansping (501)	Hymas	Ten to 20 inches	Upper side slopes; 15 to 30%	Very stony fine sandy loam	Moderate	Moderate	Moderate
	Ansping	40 to 55 inches	Lower side slopes; 15 to 35%	Ansping loam	Moderate	Moderate	Moderate
Ravenswood-Shagnasty-Walti (691)	Ravenswood	30 to 40 inches	South-facing side slopes; 15 to 30%	Extremely stony loam	Slow	Moderate	Low
	Shagnasty	50 to 60 inches	North-facing upper side slopes; 15 to 30%	Extremely stony loam	Slow	Moderate	Low
	Walti	20 to 30 inches	Crests and side slopes	Extremely stony loam	Very slow	Moderate	Low
Ansping-Hymas (511)	Ansping	40 to 55 inches	Lower side slopes and foot slopes; Four to 15%	Loam	Moderate	Moderate	Moderate
	Hymas	Ten to 20 inches	Upper side slopes; 15 to 30%	Cobbly loam	Moderate	Moderate	Moderate
y-Ravenswood-Rock outcrop (764)	Shagnasty	50 to 60 inches	Upper side slopes; 30 to 50%	Extremely stony loam	Slow	Moderate	Low

Association	Soil Series	Range in Depth to Hardpan	Landscape position/ % Slope	Profile Soil Texture	Permeability	Erosion Hazard by Water	Erosion Hazard by Wind
	Ravenswood	30 to 40 inches	Lower side slopes; 30 to 50%	Extremely stony loam	Slow	Moderate	Low
	Rock outcrop	Zero	Eroded side slopes; 15%	NA	NA	Moderate	Low
Decram-Hapgood-Loncan (552)	Decram	30 to 40 inches	Crests and upper side slopes; Eight to 30%	Very stony loam	Moderate	Moderate	Low
	Hapgood	40 to 48 inches	North-facing side slopes; 30 to 50%	Very gravelly loam	Moderate	Moderate	Low
	Loncan	21 to 38 inches	South-facing side slopes; 30 to 50%	Gravelly loam	Moderate	Moderate	Low
Rock outcrop-Labshaft (491)	Rock outcrop	Zero	Crests and side slopes; 55%	NA	NA	Moderate	NA
	Labshaft	Ten to 20 inches	Side slopes; 15 to 50%	Very stony loam	Moderately slow	Moderate	Moderate
Winu-Spinlin (481)	Winu	24 to 40 inches	Side slopes; 15 to 30%	Gravelly loam	Moderately slow	Moderate	Low
	Spinlin	30 to 40 inches	Crests and upper side slopes; 15 to 75%	Extremely stony loam	Slow	Moderate	Low
Bregar-Jivas-Duff (972)	Bregar	Eight to 12 inches	Crests and upper side slopes; 15 to 75%	Very gravelly loam	Moderately slow	Moderate	Low
	Jivas	40 to 60 inches	South-, east-, and west-facing slopes; 45 to 30%	Gravelly loam	Moderate	Moderate	Low
	Duff	40 to 60 inches	North-facing side slopes; 30 to 75%	Gravelly loam	Moderate	Moderate	Low
Mau-Shagnasty-Eightmile (321)	Mau	20 to 40 inches	Lower side slopes; 15 to 30%	Stony loam	Slow	Moderate	Low
	Shagnasty	50 to 60 inches	Side slopes; 15 to 30%	Very stony loam	Slow	Moderate	Low

Association	Soil Series	Range in Depth to Hardpan	Landscape position/ % Slope	Profile Soil Texture	Permeability	Erosion Hazard by Water	Erosion Hazard by Wind
	Eightmile	Six to 14 inches	Upper side slopes; 15 to 30%	Very gravelly loam	Moderate	Moderate	Low
Lien-Hayeston (111)	Lien	Seven to ten inches	Crests and shoulders of ballenas; Four to 15%	Very gravelly loam	Moderately rapid	Moderate	Low
	Lien	Ten to 14 inches	Crests and shoulders of ballenas; Four to 15%	Very gravelly loam, thick sodum	Moderately rapid	Moderate	Low
	Hayeston	60 or more inches	Inset fans; Zero to four%	Sandy loam	Moderately rapid	Moderate	Low
Winu-Mosquet (480)	Winu	24 to 40 inches	Side slopes; 15 to 50%	Gravelly loam	Moderately slow	Moderate	Low
	Mosquet	Six to 20 inches	Crests and upper side slopes; 30 to 50%	Very stony loam	Slow	Moderate	Low
Shagnasty-Softscrabble (762)	Shagnasty	50 to 60 inches	Side slopes; 15 to 50%	Extremely stony loam	Slow	Moderate	Low
	Softscrabble	50 to 60 inches	Lower side slopes; 15 to 30%	Very stony fine sandy loam	Slow	Moderate	Low

Source: Natural Resources Conservation Service 2009.

3.17 Vegetation

Vegetation within the Project Area consists of mountain shrub, piñon-juniper woodland, and sagebrush vegetation communities (NRCS 2009). The south, southeast, and east facing slopes of higher elevations of the northern portion of the Project Area are dominated by the mountain shrub vegetation community. Common shrubs within this vegetation community include curl-leaf mountain mahogany (*Cercocarpus ledifolius*), antelope bitterbrush (*Purshia tridentata*), manzanita (*Arctostaphylos* sp.), and serviceberry (*Amelanchier* sp.) with an understory of mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and rabbitbrush (*Chrysothamnus* sp.). Forbs within the mountain shrub vegetation community may include golden currant (*Ribes aureum*) and mule's ear (*Wyethia* sp.). Grasses that may be found within this vegetation community include mountain brome (*Bromus marginatus*), bluebunch wheatgrass (*Pseudoroegneria spicata*), and Thurber's needlegrass (*Achnatherum thurberianum*) (NRCS 2009).

Piñon-juniper woodland occurs throughout the central and southern portions of the Project Area on southwest and east facing slopes. The plant species within this vegetation community are representative of upland communities in the northern half of the distribution and representative of lowland communities in the southern half of the distribution. This vegetation community may contain an overstory of single-leaf piñon (*Pinus monophylla*), Utah juniper (*Juniperus*

osteosperma) and mountain mahogany with understory shrubs including mountain big sagebrush, big sagebrush (*Artemisia tridentata*), rabbitbrush, black sagebrush (*Artemisia nova*), and Nevada jointfir (*Ephedra nevadensis*). Forbs that may occur within this vegetation community include phlox (*Phlox* sp.) and buckwheat (*Eriogonum* sp.). Grasses that may be found within the piñon-juniper woodland include bottlebrush squirreltail (*Elymus elymoides*), Idaho fescue (*Festuca idahoensis*), Indian ricegrass (*Achnatherum hymenoides*), Thurber's needlegrass, bluebunch wheatgrass, and Sandberg bluegrass (*Poa secunda*) (NRCS 2009).

Sagebrush vegetation communities occur in the northern, central, and southern portions of the Project Area on slopes of all aspects. The lower elevations of the northern and southwestern portions of the Project Area are dominated by mountain big sagebrush and big sagebrush with scattered black sagebrush. Dense stands of Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) occupy open areas in the vicinity of the Ratto Canyon drainage (BLM 1999). Areas of low sagebrush (*Artemisia arbusucula*) occur in the southeastern portion of the Project Area. Additional shrubs that may occur within the sagebrush vegetation communities include rabbitbrush and antelope bitterbrush. Forbs such as phlox, golden currant, mule's ears, arrowleaf balsamroot (*Balsamorhiza sagittata*), lupine (*Lupinus* sp.), hawksbeard (*Crepis* sp.), and buckwheat may be found within the sagebrush vegetation communities. Grasses that may occur within the sagebrush vegetation communities include cheatgrass (*Bromus tectorum*), bluebunch wheatgrass, Sandberg bluegrass, needle and thread (*Hesperostipa comata*), Indian ricegrass, bottlebrush squirreltail, Thurber's needlegrass, Idaho fescue, mountain brome, Great Basin wildrye (*Leymus cinereus*), and Letterman's needlegrass (*Achnatherum lettermanii*) (NRCS 2009).

In addition to these upland vegetation types, a small number of seeps and springs occur within the Project Area. These sites support small amounts of coyote willow (*Salix exigua*), wild rose (*Rosa woodsii*), Baltic rush (*Juncus balticus*), sedges (*Carex* sp.), spikerush (*Eleocharis* sp.), meadow barley (*Hordeum brachyantherium*), monkeyflower (*Mimulus* sp.), and several other species typically associated with mesic conditions (BLM 1999).

The Project Area is located within a pine nut sale and a Christmas tree sale area. Great Basin bristlecone pine (*Pinus longaeva*) and limber pine (*Pinus flexilis*) may be present within the Project Area.

3.17.1 Special Status Vegetation Species

No federally-listed plant species are known to occur within the Project Area; therefore, federally-listed plant species are not addressed further in this EA.

The Nevada Natural Heritage Program (NNHP) identified potential habitat for starveling milkvetch (*Astragalus jejunus* var. *jejunus*), a Taxon determined to be imperiled by the NNHP and low feverfew (*Parthenium ligulatum*), a BLM sensitive species. Starveling milkvetch occurs at elevations ranging 5,740 to 7,310 feet amsl in sagebrush and piñon-juniper vegetation communities. This species is found on dry, barren ridges, summits and bluffs, dry hilltops, gullied bluffs, and river terraces on tuff, shale, sandstone, cobble, or clays. Potential habitat for starveling milkvetch occurs within the Project Area. Low feverfew occurs at elevations ranging 5,610 to 7,095 feet amsl in the piñon-juniper vegetation community. This species is found on barren clay slopes and flats. Potential habitat for starveling milkvetch occurs within the Project Area. Potential habitat for low feverfew occurs within the Project Area.

3.18 Wetlands and Riparian Zones

A small number of seeps and springs occur within the Project Area including an unnamed spring within Section 16, T18N, R35E and Ratto Spring and Sierra Spring within Section 27, T18N, R53E. These sites support hydrophytic vegetation including coyote willow (*Salix exigua*), wild rose, Baltic rush, sedges, spikerush, meadow barley, monkeyflower, and several other species typically associated with mesic conditions (BLM 1999).

3.19 Visual Resources

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

Approximately 38 acres of the Project Area (1.3 percent of the Project Area) is located in a Class III VRM area. The objective for this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer (BLM 1986).

Approximately 2,950 acres of the Project Area (98.7 percent of the Project Area) is located in a Class IV VRM area. The objective of this class is to provide for management activities that allow for major modification of the existing character of the landscape. Management activities would be allowed to dominate the visual landscape and be the main 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 of line, form, color, and texture (BLM 1986). Previous disturbance in the Project Area consists of linear (i.e., drill roads) and patchy features (i.e., drill pads, pits).

The Project Area is located in the central Great Basin section of the Basin and Range province. The Great Basin province is defined by a rhythmic pattern of isolated mountain ranges and broad basins. Clear skies and open vistas characterize the natural landscape. Locally, the Project Area is characterized by the upper slopes of the Fish Creek Range.

3.20 Wild Horses and Burros

The Project Area is within the Fish Creek Wild Horse Herd Management Area (HMA). As a result of the elevation and winter conditions, the primary use of the Project Area by wild horses occurs during the summer months. Open, south-facing slopes are used during winter. The limited perennial water sources restrict wild horse use to periods when ephemeral sources are available, or specifically to the Ratto Canyon area with its two perennial springs, Ratto Spring and Sierra Spring.

4 ENVIRONMENTAL CONSEQUENCES

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

4.1 Proposed Action

4.1.1 Air Quality

The Project has the potential to disturb approximately 266.4 acres. Travel on dirt access roads and drilling activities within the area of the Proposed Action would create fugitive dust, causing a minor impact to air resources. All activities with 20 acres of surface disturbance would be operated under a required air quality permit from the BAPC, and fugitive dust would be controlled by minimizing surface disturbance and utilization of other BMPs. Speed limits on access roads would be observed and travel on roads within the Project Area would be conducted at prudent speeds. Impacts would be controlled by using water trucks for dust suppression, if required. Reclamation of proposed surface disturbance would gradually eliminate any potential for long-term impacts to air resources.

4.1.2 Cultural Resources

A number of cultural sites are known to be located in the Project Area. All previous cultural surveys conducted in the Project Area are more than ten years old. As outlined in the environmental protection measures in Section 2.1.13, BHM would avoid all cultural sites within the Project Area. In order to avoid cultural sites, BHM would submit an annual work plan to the BLM. BHM would ensure that cultural sites within the area of proposed phase surface disturbance are mapped by a qualified cultural resource specialist with a GPS unit prior to surface disturbance, and a summary report of that mapping would be provided to the BLM by the cultural resource specialist. The BLM would review the proposed locations of the surface disturbance and notify BHM if the locations overlap with any cultural site. If a cultural site is located within the area of proposed surface disturbance, the identified cultural site(s) would be avoided or re-evaluated.

4.1.3 Noxious Weeds, Invasive and Nonnative Species

The strategy for noxious weed management is to, “prevent and control the spread of noxious weeds through local and regional cooperative efforts…to ensure maintenance and restoration of healthy ecosystems on BLM managed lands”. Noxious weed control would be based on a program of “prevention, education, detection and rapid response (control) of small infestations.” New surface disturbance from the Proposed Action would increase the potential for and promote the spread and establishment of noxious weeds, invasive and nonnative species. These impacts would be minimal based on implementation of the environmental protection measures outlined in Section 2.1.13.

4.1.4 Wildlife (including Migratory Birds and Special Status Species)

Direct impacts to wildlife would consist of temporary habitat loss and disturbance from human activity and noise. Approximately 266.4 acres of existing wildlife habitat would be temporarily impacted by exploration activities over a ten-year period, with the actual length of time based on exploration results.

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

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

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

4.1.4.1 Migratory Birds

The Proposed Action includes measures to avoid nesting migratory birds including golden eagles (Section 2.1.13). Therefore, the destruction of active nests or disruption of breeding behavior of migratory bird species would not occur as a result of the Proposed Action. Project-related surface disturbance would result in the temporary loss of habitat for migratory birds in the Project Area. No long-term impacts are likely to occur because reclamation and reestablishment of vegetation would take place within two years of Project completion.

4.1.4.2 Special Status Wildlife Species

Although there are no known special status wildlife species within the Project Area, several BLM sensitive raptor, bird, and bat species (e.g., ferruginous hawk, golden eagle, Swainson's hawk, long-eared owl, short-eared owl, greater sage-grouse, Townsend's big-eared bat, western small-footed myotis, big brown bat, California myotis, long-eared myotis, little brown bat, and long-legged myotis) likely occur in the Project Area. The Proposed Action includes measures to avoid nesting migratory birds including golden eagles (Section 2.1.13); therefore, the destruction of active nests or disruption of breeding behavior of sensitive bird species would not occur as a result of the Proposed Action. The Proposed Action also includes a measure to avoid impacts to pygmy rabbits in the Project Area (Section 2.1.13); therefore, no impacts to occupied pygmy rabbit habitat would occur as a result of the Proposed Action. Disturbance would be created incrementally and dispersed throughout the Project Area; therefore, minimal impacts to BLM sensitive raptor and bird species are anticipated.

Bat species would likely utilize the Project Area for roosting and foraging. Townsend's big-eared bat, western small-footed myotis, big brown bat, California myotis, and long-eared myotis are cavern dwellers and may roost in the limited number of shafts, adits, and buildings constructed during previous mining operations within the Project Area. These features would not be impacted as a result of the Proposed Action; therefore, there would be no impact to the roosting habitat of Townsend's big-eared bat, western small-footed myotis, big brown bat, California myotis, and long-eared myotis within the Project Area. Little brown bat and long-legged myotis may roost in hollow trees within the Project Area. The Proposed Action includes approximately 266.4 acres of surface disturbance resulting in indirect impacts to little brown bat and long-legged myotis roosting habitat. Forest openings around Ratto Spring and Sierra Spring may provide foraging habitat for all seven of the bat species listed above. As stated in the environmental protection measures, impacts to surface water resources within the Project Area would be avoided (Section 2.1.13); therefore, the Proposed Action would have minimal impacts to bats.

Project-related surface disturbance would result in the temporary loss of habitat for special status wildlife species and bat species in the Project Area. No long-term impacts are likely to occur because reclamation and reestablishment of vegetation would take place within two years of Project completion.

4.1.5 Native American Concerns

Various tribes and bands of the Western Shoshone have stated that federal projects and land actions can have widespread effects to their culture and religion as they consider the landscape as sacred and as a provider. Various locations throughout the BLM MLFO Battle Mountain administrative area host certain traditional/spiritual/cultural use activities today, as in the past. Sites and resources considered sacred or detrimental to the continuation of tribal traditions include, but are not limited to: prehistoric and historic village sites, sources of water (hot and cold springs), pine nut gathering locations, sites of ceremony and prayer, archaeological sites, burial locations, "rock art" sites, medicinal/edible plant gathering locations, areas associated with creation stories, or any other tribally designated TCP. Tribal TCPs are not known to exist in the vicinity of the Project. The BLM continues to solicit input from local tribal entities.

For this Proposed Action, BHM has committed to avoiding archaeological sites discovered and documented during cultural resources inventories. The BLM is currently in the process of attempting to identify (with the local tribes) any specific cultural/traditional/spiritual use sites, resources and activities that may exist within the Project Area and thus might experience an impact.

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

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

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

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

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

4.1.6 Wastes, Hazardous or Solid

The generation of wastes and the use of hazardous materials as a result of the Proposed Action may result in the release of these wastes or materials. Section 2.1.11 of this EA outlines the management of these wastes and hazardous 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 2.1.11 of this EA outlines how these wastes and materials would be managed and how a spill would be addressed. BHM's Spill Prevention Plan, which is included in the Plan, outlines how wastes and materials would be managed and how a spill would be addressed. Therefore, hazardous and solid wastes from the Proposed Action would have no impacts to the environment.

4.1.7 Water Quality

4.1.7.1 Surface Water

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

Impacts would be minimal due to the use of nontoxic drilling fluids and adherence to NAC 534.4369 and 534.4371. By implementing the environmental protection measures outlined in Section 2.1.13 including BMPs for road and drill pad construction, impacts to surface water resources would be minimized. Any residual impacts would be temporary, lasting only until exploration roads and drill pads are successfully reclaimed and revegetated.

4.1.7.2 Ground Water

The Project design and environmental protection measures (Section 2.1.13) would ensure that the Proposed Action does not cause degradation of ground water quality. The Project would consume ground water under a permit for drilling purposes.

4.1.8 Fire Management

Implementation of the Proposed Action would be coordinated with the BLM's MLFO fire staff in order to ensure the safety of BHM personnel during all periods of prescribed fire activity pertaining to the Fish Creek Hazardous Fuels Reduction Project. Based on fire avoidance measures to be implemented under the Proposed Action (Section 2.1.13) and the fact that the Project Area would continue to be accessible, no impacts to fire management are anticipated. In addition, reclamation measures include seeding with native vegetation that may be more favorable to fire avoidance and suppression in the long term. Therefore, no impacts to fire management from the Proposed Action are anticipated.

4.1.9 Geology and Minerals

The Project would not involve the removal of large volumes of earth that could potentially lead to structural instability. Only small samples of drill rock or rock chips would be removed and sampled. Therefore, the Proposed Action would not result in any impacts to geology and minerals.

4.1.10 Paleontological Resources

The CFR 3809 regulations list only vertebrate fossils as critically important. No vertebrate fossils have been found previously in the Project Area, and the geologic formations in the Project Area are not expected to include vertebrate fossils; therefore, no impacts to significant paleontological resources are anticipated. An abundance of invertebrate fossils are likely, some of which occur in exposed formations just to the north of the Project Area. The dispersed nature of the Project and the surficial nature of the disturbance would minimize potential impacts to paleontological resources.

4.1.11 Land Use, Access, Public Safety, and Recreation

Land uses within and around the Project Area consist of two ROWs, county maintained roads available for public use, recreation, grazing, mineral exploration, and mining. The Proposed Action would result in minor temporary changes to land use in the Project Area with regard to recreation and grazing. Public safety would be maintained throughout the life of the Project as described in the environmental protection measures (Section 2.1.13), which include that all equipment and other facilities would be maintained in a safe and orderly manner; all trenches, sumps, and other small excavations that pose a hazard or nuisance to the public, wildlife, or livestock would be adequately fenced to preclude inadvertent access to them; activities would be restricted to frozen or dry ground conditions where feasible; and in the event that any existing roads are severely damaged as a result of BHM activities, BHM would return them to their original condition. There would be no impact to recreation because the current access roads would remain open.

As stated in Section 3.12, impacts to access along the ROW in the Project Area to the communication site on Prospect Peak would be avoided by the Proposed Action. BHM has entered into a MOU with the County of Eureka Board of Commissioners to ensure adequate maintenance standards are met by the ERCD along county-maintained roads. Additionally, BHM is not proposing any changes or alterations to existing access roads outside of the Project Area. In addition, activities associated with pine nut and Christmas tree sales would not be restricted and these uses should not be impacted by the Proposed Action.

4.1.12 Grazing Management

The Project Area lies within the Fish Creek North Use Area of the Fish Creek Ranch Grazing Allotment, the Arambel Grazing Allotment, and the Ruby Hill Grazing Allotment. The Proposed Action includes surface disturbance of approximately 266.4 acres of the 2,988-acre Project Area, or less than nine percent of the Project Area over a ten-year period. The impact to grazing management would be minimal because of the small and dispersed nature of surface disturbance resulting from the phased exploration activities. Further, surface water resources within the Project Area would be protected by measures discussed in Section 2.1.13. The avoidance of direct impacts to springs would allow ranchers to continue to water their livestock within the Project Area during Project activities; therefore, the Proposed Action would have minimal impacts to grazing management.

4.1.13 Socioeconomic Values

Approximately 12 individuals (nine on drill crews, one operating the water truck, and two geologists) would be contracted or employed to conduct the exploration activities. Personnel would reside in the town of Eureka Nevada. Such personnel would be temporary and should not create a demand for additional public or private services. However, these individuals would support local businesses and provide income to the community through the purchase of goods and services. Activities associated with pine nut and Christmas tree sales would not be restricted and income from these activities would not be affected. Therefore, the Proposed Action impacts to socioeconomics would be short term and beneficial.

4.1.14 Environmental Justice

No minority or low-income groups would be affected by disproportionately high and adverse health or environmental effects as a result of this Project. Therefore, no further analysis of this critical element is included in this document.

4.1.15 Soils

Surface disturbance associated with the Proposed Action would impact up to 266.4 acres of soils. The soil associations in the Project Area vary from low to moderate for erosion hazard by water and erosion hazard by wind. Exploration activities associated with the Proposed Action would increase the wind and water erosion potential of disturbed soils until reclamation was successfully completed.

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

4.1.16 Vegetation

The Proposed Action would result in surface disturbance of approximately 266.4 acres of vegetation. The disturbance would be created incrementally and dispersed throughout the Project Area. Reclamation would begin upon completion of exploration activities using a BLM-approved seed mix. In addition, the disturbance would be primarily linear (roads) or patchy (drill pads) in form, and therefore highly likely to be recolonized by surrounding vegetation.

4.1.16.1 Special Status Vegetation Species

The NNHP identified the potential for starveling milkvetch, a taxon determined to be imperiled by the NNHP and low feverfew, a BLM sensitive species. There are no known populations of special status vegetation species within the Project Area (BLM 1999); therefore, no impacts to special status vegetation species as a result of the Proposed Action are anticipated.

4.1.17 Wetlands and Riparian Zones

The Proposed Action would have no impacts to wetlands or riparian zones because BHM would avoid direct impacts to the springs within the Project Area (Section 2.1.13).

4.1.18 Visual Resources

The Proposed Action would result in short-term visual impacts principally affecting the visual elements of line and color. Horizontal and shallow diagonal lines from drill roads would cause moderate, temporary line contrasts with the natural landscape. Disturbance of vegetation would cause moderate, temporary color contrasts. With successful reclamation of exploration roads and revegetation, long-term visual impacts would be minimized. The effects of the Proposed Action on visual resources would be consistent with BLM prescribed Class III and IV VRM objectives.

4.1.19 Wild Horses and Burros

The Proposed Action would result in surface disturbance of approximately 266.4 acres of surface disturbance over a ten-year period. None of the activities associated with the Proposed Action would impede the movement of wild horses through the Project Area. Any disturbance to wild horses would likely be limited to temporary auditory and/or visual perturbation of individuals in or near the Project Area. Individual wild horses foraging in the Project Area during exploration activities would likely leave the immediate area, resulting in a temporary spatial redistribution of individuals or habitat-use patterns during the Project. Such redistribution would not have a long-term effect because undisturbed and suitable habitat exists around the Project Area. Activity near permanent water sources may prevent wild horses from utilizing the Project Area; however, direct impacts to surface water resources within the Project Area would be avoided (Section 2.1.13). Avoiding direct impacts to surface water resources would allow wild horses to continue to water within the Project Area during Project activities; therefore, the Proposed Action would have minimal impacts to wild horses.

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

4.2 No Action Alternative

Under the No Action Alternative, none of the impacts associated with the Proposed Action would occur. However, ongoing mineral exploration activities currently permitted in the Project Area (as described in Section 2.1) and activities on private land, which are similar to those described for the Proposed Action, would result in impacts similar to those associated with the Proposed Action.

4.2.1 Air Quality

The No Action Alternative would include surface disturbance of up to 7.9 acres on public land. Under the No Action Alternative, travel on dirt roads, drilling, and excavation activities would create fugitive dust, causing a minor impact to air resources. Fugitive dust would be controlled by minimizing surface disturbance. Speed limits on access roads would be observed, and travel on roads within the Project Area would be conducted at prudent speeds. Impacts would be controlled by using water trucks for dust suppression, if required. Reclamation of surface disturbance would gradually eliminate long-term impacts to air resources.

4.2.2 Cultural Resources

Under the No Action Alternative, there would be no impacts associated with the Proposed Action to known cultural sites. BHM's surface disturbance activities under the No Action Alternative would also avoid known cultural sites.

4.2.3 Noxious Weeds, Invasive and Nonnative Species

Under the No Action Alternative, none of the impacts associated with the Proposed Action would occur; however, ongoing activities currently permitted in the Project Area would continue to occur and may impact noxious weeds, invasive and nonnative species.

4.2.4 Wildlife (including Migratory Birds and Special Status Species)

Under the No Action Alternative, none of the impacts associated with the Proposed Action would occur to wildlife (including migratory species); however, ongoing activities currently permitted in the Project Area would continue to occur, which would result in the temporary loss of up to 7.9 acres of wildlife habitat. Impacts to wildlife as a result of the No Action Alternative would be similar, but proportionally less than the Proposed Action. The No Action Alternative would have no impacts to special status wildlife species.

4.2.5 Native American Concerns

Under the No Action Alternative, there would be no impacts to Native American concerns associated with the Proposed Action.

4.2.6 Wastes, Hazardous or Solid

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

4.2.7 Water Quality

Potential water quality impacts as a result of this alternative would be greater than the Proposed Action due to the fact that this alternative does not implement the BMPs or environmental protection measures identified in the Proposed Action. Potential impacts would include reduction of surface water quality from increased sedimentation.

4.2.8 Fire Management

Under the No Action Alternative, there would be no impacts to fire management.

4.2.9 Geology and Minerals

Under the No Action Alternative, there would be no impacts to geology and minerals.

4.2.10 Paleontological Resources

Under the No Action Alternative, there would be no impacts to paleontological resources.

4.2.11 Land Use, Access, Public Safety, and Recreation

Under the No Action Alternative, there would be no impacts to land use, access, public safety, or recreation.

4.2.12 Grazing Management

Under the No Action Alternative, less than one percent of the Fish Creek North Use Area of the Fish Creek Ranch Grazing Allotment, the Arambel Grazing Allotment, and the Ruby Hill Grazing Allotment, respectively, would be impacted. This impact is similar to but less than the Proposed Action.

4.2.13 Socioeconomic Values

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

4.2.14 Environmental Justice

Under the No Action Alternative, there would be no impacts to environmental justice.

4.2.15 Soils

Under the No Action Alternative, the construction and maintenance of access roads and drill pads would impact up to 7.9 acres of soils. The potential for wind and water erosion of disturbed soils would be increased until reclamation was successfully completed. The potential impacts to soils would be reduced by measures incorporated in the Project design, including the use of waterbars and other BMPs, and the concurrent reclamation of drill pads, sumps, trenches, and drill roads no longer needed for access. Impacts associated with the No Action Alternative would be similar to but less than the Proposed Action.

4.2.16 Vegetation

In the absence of any surface disturbing activities, impacts to vegetation resources from the Proposed Action would not occur; however, ongoing activities including 7.9 acres of surface disturbance currently permitted in the Project Area would continue.

Under the No Action Alternative, there would be no impacts to special status plant species.

4.2.17 Wetlands and Riparian Zones

Under the No Action Alternative, there would be no avoidance measures for impacts to wetlands or riparian zones.

4.2.18 Visual Resources

Under the No Action Alternative, none of the impacts associated with the Proposed Action would occur to visual resources; however, ongoing activities currently permitted in the Project Area would continue to occur.

4.2.19 Wild Horses and Burros

Under the No Action Alternative, none of the impacts associated with the Proposed Action would occur to wild horses; however, ongoing activities currently permitted in the Project Area would continue to occur, which would result in the temporary loss of up to 7.9 acres of wild horse habitat. Impacts to wild horses as a result of the No Action Alternative would be similar, but proportionally less than the Proposed Action.

5 CUMULATIVE EFFECTS

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

> "...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

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

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

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

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

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

5.1 Introduction

Environmental consequences of the Proposed Action were evaluated previously in Chapter 4 for the various environmental resources. Discussed in the following sections are the resources that have potential to be cumulatively impacted by the Proposed Action within the identified CESA. The discussions are based upon the previous analysis of each environmental resource. Based on the preceding analysis, the Proposed Action would not impact the following resources and would therefore not have cumulative impacts: cultural; wastes, hazardous or solid; fire management; geology and minerals; paleontological resources; land use, access, public safety, and recreation; socioeconomic values; environmental justice; wetlands and riparian zones; and wild horses and burros. These resources are not discussed further in the cumulative impacts section.

The geographical areas considered for the analysis of cumulative effects vary in size and shape to reflect each evaluated environmental resource and the potential area of impact to each from the Proposed Action as determined through the analysis in Chapter 4. For this cumulative impact analysis, the 2,988-acre Project Area is the CESA for invasive, nonnative species. The Fish

Creek watershed encompasses approximately 200,249 acres and is the CESA for soils, surface water, and visual resources. The Little Smoky Valley (Northern Part) Hydrographic Basin, which encompasses approximately 371,467 acres, is the CESA for ground water and air quality. The CESA for wildlife, migratory birds, and vegetation consists of approximately 734,058 acres and includes NDOW Hunt Units 144 and 145. The CESA for grazing management is the Fish Creek Ranch, Arambel, and Ruby Hill Allotments, which total approximately 358,874 acres. Table 5.1-1 outlines the CESA area by each resource. The CESA for Native American concerns encompasses 568,869 acres. Figure 5.1.1 shows the CESA boundaries.

Table 5.1-1: Cumulative Effects Study Areas

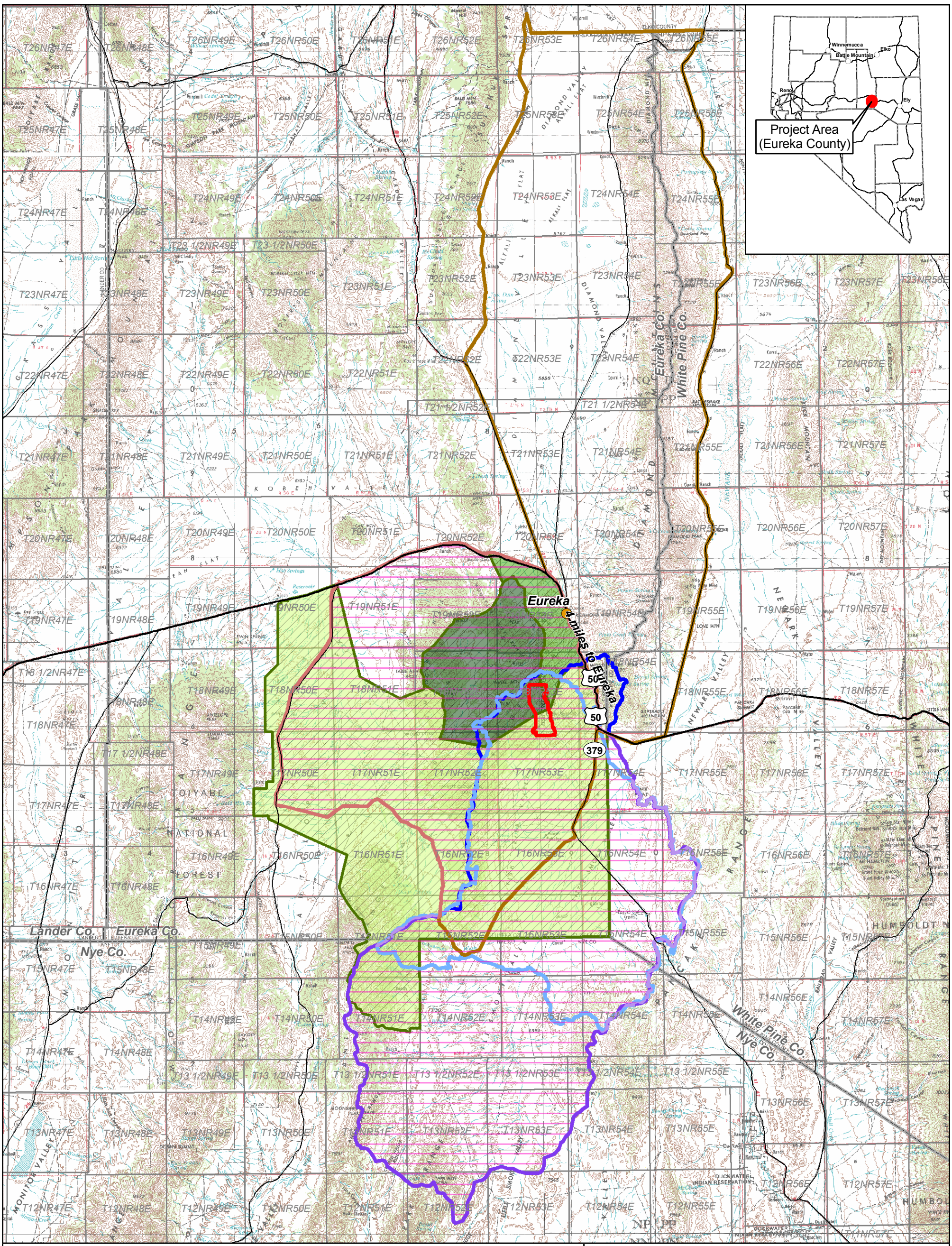
Resource	Cumulative Effects Study Area (CESA)	Description of CESA	Size of CESA (acres)
Noxious Weeds, Invasive and Nonnative Species	Nonnative, Invasive Species CESA	Project Area	2,988
Ground Water, Air Quality	Ground Water and Air CESA	Little Smoky Valley (northern part) hydrographic basin	371,467
Soils, Surface Water, Visual Resources	Watershed CESA	Fish Creek Watershed (HUC 5)	200,249
Wildlife (including Migratory Birds and Special Status Species), Vegetation	Biology CESA	NDOW Hunt Units 144 and 145	734,058
Native American Concerns	Native American Concerns CESA	The northern boundary of the CESA is Highway 50, the western Boundary is the Wildlife CESA combined with Ground Water and Air CESA, the southern Boundary is the Ground Water and Air CESA, and the eastern Boundary is Ground Water and Air CESA and the Watershed CESA	568,869
Grazing Management	Range CESA	Fish Creek Ranch, Arambel, and Ruby Hill Allotments	358,874

5.2 Past and Present Actions

Past and present actions for the Nonnative, Invasive Species CESA are discussed in Chapter 3 and include livestock grazing, fire management, ROW maintenance, and dispersed recreation.

Past and present actions for the Ground Water and Air CESA include livestock grazing, fire management, material sites, material storage sites, minerals exploration (2.41 acres Notice-level), ROW maintenance, oil and gas leases, and dispersed recreation.

Past and present actions for the Watershed CESA include livestock grazing, fire management, material storage sites, community pit, mineral exploration (2.3 acres Notice-level), ROW maintenance, oil and gas leases, and dispersed recreation.



Legend

- Project Area (Nonnative, Invasive Species CESA)
- Native American Concerns CESA
- Ground Water and Air Quality CESA
- Soils, Surface Water, and Visual Resources CESA
- Wildlife, Migratory Birds, and Vegetation CESA

Grazing CESA

- Arambel Allotment
- Fish Creek Ranch Allotment
- Ruby Hill Allotment

0 5 10 15 Miles

Projection: UTM Zone 11 North, NAD83

N

NATIONAL SYSTEM OF PUBLIC LANDS

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 by updated without notification.

BUREAU OF LAND MANAGEMENT

LOOKOUT MOUNTAIN EXPLORATION PROJECT

Cumulative Effects Study Areas

Figure 5.1.1

06/28/2010

Past and present actions for the Biology CESA include livestock grazing, fire management, material storage sites, community pits, mineral exploration (19.56 acres Notice-level), mining (745.3 acres Plan-level), ROW maintenance, oil and gas leases, land sale, and dispersed recreation.

Past and present actions for the Native American Concerns CESA include livestock grazing, mineral exploration (4.9 acres Notice-level), mining (745.4 acres Plan-level), public works projects in Eureka, oil and gas lease sales, Duckwater Land Expansion, fuels reductions, land sales, and water source development.

Past and present actions for the Range CESA include livestock grazing, fire management, material storage sites, community pits, mineral exploration (4.9 acres Notice-level), mining (745.3 acres Plan-level), ROW maintenance, oil and gas leases, geothermal leases, land sale, and dispersed recreation.

5.2.1 Mineral Exploration and Mining

Exploration activities in the Eureka Mining District, at and in the vicinity of the Project, have occurred since the 1860s when lead/silver ores were first discovered in the New York Canyon area. Historic focused exploration activities on finding additional lead, zinc, silver, and gold bearing ores being produced at Eureka, about six miles north of Lookout Mountain. Discovery of several small lead/silver/gold mines in what was known as the Secret Canyon District (South Eureka District), about one mile east of Lookout Mountain/Ratto Ridge, occurred during this time period.

In 1905 gold ore was discovered at Windfall Canyon, approximately 3.5 miles northeast of Lookout Mountain. The Windfall discoveries were important as these gold ores contained no base metals and only minor, if any, silver. Renewed interest in the gold only ore types at Windfall brought modern day prospectors into the area. Beginning in the 1960s, a series of companies have mapped, sampled, and drilled the Lookout Mountain/Ratto Ridge area. The largest effort by Amselco Exploration discovered several small ore bodies along Ratto Ridge and Lookout Mountain. Major exploration efforts include the following:

- 1960s: Cordero Mining drilled several core and rotary holes in the Pinnacle Peak and Lookout Mountain areas.
- Newmont drilled five exploration holes in 1963 in the Prospect Peak/Rocky Canyon area, looking for porphyry molybdenum mineralization.
- Between 1963 and 1974: The property sat idle until the Bisoni brothers staked 48 claims on Lookout Mountain based on anomalous rock chip sampling.
- 1978 - 1985: Amselco Exploration signed an agreement with the Bisoni brothers and drilled 204 conventional rotary and reverse circulation drill holes, built over 16 miles of drill roads, and took 1,100 rock samples. Amselco discovered the South Adit, Pinnacle Peak, and Lookout Mountain gold resources.
- 1986: Norse Windfall Mines acquired the property from Amselco and mined the Lookout Mountain and Windfall gold resources in 1987 and 1988. Norse Windfall also took 943 rock samples over the 2.5 mile length of Ratto Ridge.
- 1990: EFL Gold Mines purchased the Amselco claim group and drilled nine reverse circulation drill holes.

- 1993: Barrick Gold leased the Ratto Canyon/Lookout Mountain property from Rocky Canyon Mining. Barrick drilled 41 drill holes, ran several geophysical surveys and completed a 300- by 400-foot soil grid. Barrick drilling targeted deeper geophysical targets and down dip extensions of known mineralization.
- 1994 - 1998: Echo Bay leased the Lookout Mountain Claim group and staked additional claims in the Rocky Canyon area to the North. 104 holes were drilled, increased the size of Barrick Gold Company's soil grid, and took over 300 rock chip samples. Most of Echo Bay's activity occurred just north of Lookout Mountain.
- 1998: Alta Gold Company acquired the property and began permitting for a plan of operations to develop the property into a mine. Alta Gold went bankrupt in 2000.
- 2004 - 2007: BHM/Staccato Gold Resources Ltd. acquired the property and drilled 25 core holes from 2005 to 2007 and 29 core and RC holes in 2008.

5.2.2 Livestock Grazing

The Nonnative, Invasive Species CESA lies within the Fish Creek North Use Area of the Fish Creek Ranch Grazing Allotment, the Arambel Grazing Allotment, and the Ruby Hill Grazing Allotment.

The Ground Water and Air CESA lies within the Fish Creek Ranch, Ruby Hill, Arambel, Snowball, and Pancake Black Point Grazing Allotments.

The Watershed CESA lies within the Fish Creek Ranch, Ruby Hill, Arambel, and Pancake Black Point Grazing Allotments.

The Biology CESA lies within the Fish Creek Ranch, Lucky C, Ruby Hill, Arambel, Silverado, Newark, Strawberry, Warm Springs, Cold Creek, Railroad Pass, Corta, Union Mountain, North Diamond, Diamond Springs, Three Mile, Black Point, Shannon Station, Romano, Spanish Gulch, and Willow Race Track Grazing Allotments.

The Native American Concerns CESA lies within the Fish Creek Ranch, Lucky C, Ruby Hill, Arambel, Snowball Ranch, Duckwater, Silverado, Newark, Shannon Station, and Spanish Gulch Allotments.

The Range CESA lies within the Fish Creek Ranch Grazing Allotment, the Arambel Grazing Allotment, and the Ruby Hill Grazing Allotment.

Detailed information regarding use areas/pastures within the allotments that are located within the CESAs, the size of the use areas/pastures, AUMs for the allotments, and seasons of use for use areas/pastures is included in Table 5.2-1.

Table 5.2-1: Allotment Information for the CESAs

CESA(s)	ALLOTMENT	USE AREA(S)/PASTURE(S) AFFECTED	PUBLIC LAND ACRES	AUMs	SEASON OF USE
1,2,3,4, 5	Fish Creek Ranch	Fish Creek North	47,530	888/C*	04/01-05/15
2,3,4, 5		Fish Creek South	46,743	612/C	03/01-03/31
2,3,4, 5		Antelope Valley	154,771	2,513/C	11/01-03/31
2,3, 5		9-Mile Peak	38,739	802/S	06/01-10/31
4, 5	Lucky C	South Use Area/Yahoo Canyon	51,685	1,400/C	06/16-02/28
		Total Allotment**	108,666	3,051/C	04/15-02/28
1,2,3,4, 5	Ruby Hill	None	14,659	275/C	03/16-08/29
				1,011/S*	05/01-09/30
4, 5	Arambel	4 Corners Seeding	1,377	200/S	04/15-05/15
1,2,3,4, 5		Rest of Allotment	44,149	1,149/S	05/01-10/31
2, 5	Snowball	All	27,216	990/C	06/01-02/28
2,3	Pancake Black Point	None	6,426	609/C	06/01-02/28
5	Duckwater				
4, 5	Silverado	None	6,284	338/C	11/15-02/28
4, 5	Newark	North Diamonds	23,050	548/S	04/16-10/31
				908/C	04/16-06/01
		South Diamonds	12,490	256/S	04/16-10/31
				236/C	04/16-10/31
		Pinto Creek Seedings (North, Middle, & South)	2,044	241/C	04/16-10/31
		Newark Winter	173,263	1,968/S	11/01-04/15
				3,100/C	11/01-04/15
		Total Allotment**	218,105	9,709/C&S	03/01-02/28
4	Strawberry	None	21,135	1,032/C	06/01-10/30
4	Warm Springs	Diamond Mountain	5,372		
		Total Allotment**	306,971	7,709/C	03/01-02/28
4	Cold Creek	Diamond 1	6,088	193/C	04/16-10/31
		Diamond 2	2,609	219/C	04/16-10/31
		Diamond 3	4,647	323/C	04/16-10/31
				242/S	04/15-04/30 11/01-11/15
		Diamond 4	4,056	235/C	04/16-10/31
		Huntington 3	4,293	318/C	04/16-10/31
		Huntington 4	8,997	442/C	04/16-10/31
		Total Allotment**	62,103	5,561/C	04/16-10/31
				242/S	04/15-04/30 11/01-11/15
4	Railroad Pass	North	14,978	1,364/C	06/01-09/30
				691/S	04/05-11/15
		South	14,320	1,364/C	06/01-09/30
		Corta Seeding	1,029	540/C or S	04/05-11/15
		Total Allotment**	27,025	2,595/C&S	04/05-11/15
4	Corta	None	1,130	128/S	05/01-05/31
4	Union Mountain	All	20,940	1,759/C	05/01-11/30
4	North Diamond	All	78,892	3,582/C	05/01-01/31
4	Diamond Springs	All	69,679	3,680/C	05/01-12/30
4	Three Mile	None	26,635	850/C	05/15-12/30
4	Black Point	All	59,434	2,215/C	05/01-11/30
				2,097/S	05/01-10/31

CESA(s)	ALLOTMENT	USE AREA(S)/PASTURE(S) AFFECTED	PUBLIC LAND ACRES	AUMs	SEASON OF USE
4, 5	Shannon Station	All	32,888	2,520/C	04/01-02/28
4	Romano	7th Street	793	80/C	05/01-12/31
		Mud Field	499	100/C	10/01-12/31
		Mulligan	12,971	400/C	05/01-12/31
		North Field	193	33/C	10/01-12/31
		Valley	25,762	623/C	10/01-12/31
		Total Allotment**	76,070	2,879/C	05/01-12/31
4, 5	Spanish Gulch	None	5,985	647/S	05/01-09/30
4	Willow Race Track	All	590	252/C	06/01-09/30

[1]CESAs:

1. Nonnative, Invasive Species CESA
2. Ground Water and Air Quality CESA
3. Watershed CESA
4. Biology CESA
5. Native American Concerns CESA

*C=Cattle; S=Sheep
**Values indicate Public Land Acres, AUMs and Season of Use for the entire allotment although the entire allotment may not be directly impacted by the CESAs boundaries. The corresponding Use Areas/Pastures indicate areas directly affected by the CESAs. Any allotment that does not have "Total Allotment" information associated with it is presumed to be total allotment figures.

5.3 Reasonably Foreseeable Future Actions

RFFAs in the Nonnative, Invasive Species CESA include livestock grazing, fire management, wildland fire, ROW maintenance, and dispersed recreation.

RFFAs in the Ground Water and Air CESA include livestock grazing, fire management, wildland fire, material sites, material storage sites, ROW maintenance, oil and gas leases, and dispersed recreation.

RFFAs in the Watershed CESA include livestock grazing, fire management, wildland fire, material storage sites, community pit, ROW maintenance, oil and gas leases, and dispersed recreation.

RFFAs in the Biology CESA include livestock grazing, fire management, wildland fire, material storage sites, community pits, mineral exploration (11.48 acres), mining, ROW maintenance, oil and gas leases, land sale, and dispersed recreation.

RFFAs in the Native American Concerns CESA include the following: wildland fire; oil, gas, and geothermal exploration/development (as a result of leasing); land management decisions impacting existing tribal cattle grazing allotments; mineral exploration; land management decisions complicating the Duckwater land expansion proposal to the Nevada Congressional Delegation; and water source development.

RFFAs in the Range CESA include livestock grazing, fire management, wildland fire, material storage sites, community pits, mining, ROW maintenance, oil and gas leases, geothermal leases, land sale, and dispersed recreation.

5.4 Impact Analysis

5.4.1 Air Quality

Past and Present Actions: Present actions within the Ground Water and Air CESA that could contribute to air quality impacts include fire management, minerals exploration, ROW maintenance, and dispersed recreation. These activities are principally contributing point source particulate matter emissions and fugitive dust to the air quality impacts; however, products of combustion are also emitted.

RFFAs: RFFAs within the CESA that may contribute to emissions include minerals exploration, ROW maintenance, dispersed recreation, wildland fires. These impacts could result in impacts to air quality from the emissions of point source particulate matter, fugitive dust, and the products of combustion.

5.4.1.1 Proposed Action

Cumulative impacts to air quality within the Ground Water and Air CESA would result from the past and present actions and RFFAs when combined with the Proposed Action. The incremental contribution of the Proposed Action's particulate and combustion emissions and fugitive dust would be relatively small and the cumulative emissions are generally dispersed. Stationary sources would be regulated by the BAPC under individual permits to ensure that impacts would be reduced to levels that are consistent with the ambient air quality standards. BMPs for the Project and speed limits are measures that would minimize the potential effects of fugitive dust on air quality. Impacts would also be reduced with the implementation measures outlined in Section 2.1.13. Reclamation of Project-related proposed surface disturbance would gradually eliminate fugitive dust from wind erosion.

5.4.1.2 No Action Alternative

Cumulative impacts to air resources within the Ground Water and Air CESA would result from past and present actions and RFFAs when combined with this alternative. However, the incremental contribution of this alternative is less than the Proposed Action and would be relatively small and the cumulative emissions are generally dispersed and the stationary sources would be regulated by the BAPC to ensure that impacts would be reduced to levels that are consistent with the ambient air quality standards.

5.4.2 Noxious Weeds, Invasive and Nonnative Species

Past and Present Actions: Past and present actions with impacts created by invasive, nonnative species (noxious weeds) have included livestock grazing, fire management, ROW maintenance, and dispersed recreation. Surveys did not locate noxious weeds in the Project Area; however, invasive, nonnative species (i.e., cheatgrass, musk thistle, and hoary cress) are present in the Invasive, Nonnative Species CESA.

RFFAs: Potential impacts from invasive, nonnative species as a result of livestock grazing, fire management, ROW maintenance, dispersed recreation, or loss of vegetation associated with wildland fires could occur, and result in continued potential of invasive, nonnative species infestations.

5.4.2.1 Proposed Action

Cumulatively, the past and present actions and RFFAs in combination with the Proposed Action would result in potential impacts from invasive, nonnative species that would be limited to infestations following removal or disturbance of vegetation. The Proposed Action (266.4 acres) would impact nine percent of the CESA (2,988 acres). The past and present actions and RFFAs would impact an undetermined percentage of the Invasive, Nonnative Species CESA that is not readily quantifiable. The potential impacts from the Proposed Action would be minimized due to the implementation of environmental protection measures outlined in Section 2.1.13. As a result, a minimal incremental impact from invasive, nonnative species in the Invasive, Nonnative Species CESA is expected.

5.4.2.2 No Action Alternative

Cumulatively, the past and present actions and RFFAs would result in potential impacts from noxious weeds that would be limited to infestations following removal of vegetation. These impacts would be localized. Therefore, impacts from invasive, nonnative species as a result of this alternative would be less than the Proposed Action and in combination with past and present actions and RFFAs would be minimal.

5.4.3 Wildlife (including Migratory Birds and Special Status Species)

Past and Present Actions: The CESA for wildlife is Biology CESA, which covers 734,058 acres. Past and present actions that are likely to have impacts to wildlife (including migratory birds and special status species) include livestock grazing, fire management, material storage sites, community pits, mineral exploration, mining, ROW maintenance, oil and gas exploration, land sale, and dispersed recreation. These activities are likely to have impacts to water resources and wildlife habitat, or result in direct impacts to individuals in travel routes. Approximately 764.9 acres of disturbance have been approved for mineral activities in the Biology CESA (i.e., primarily associated with the Ruby Hill Mine). Reclamation has been performed on a number of the smaller minerals exploration projects in the CESA, which has resulted in early stages of vegetation reestablishment and habitat restoration.

Within the Biology CESA there are portions of 20 allotments. The carrying capacity within the Biology CESA for livestock varies between 128 and 9,709 AUMs.

RFFAs: Potential impacts to wildlife from livestock grazing, fire management, material storage sites, community pits, mineral exploration, mining, ROW maintenance, oil and gas leases, land sale, dispersed recreation, or loss of habitat with potential wildland fires could occur. In addition, noise could affect wildlife. Approximately 11.48 acres of RFFA disturbance would occur for mineral activities in the Biology CESA.

5.4.3.1 Proposed Action

Past and present actions and RFFA disturbance for materials storage sites and communities within the Biology CESA is 2,126 acres, which is an impact to approximately 0.3 percent of the Biology CESA (734,058 acres). The Project (266.4 acres) would impact 0.04 percent of the CESA. Due to the small impact within the Biology CESA, the impacts to wildlife or their habitat from the Proposed Action in combination with past and present actions and RFFAs would be

minimal. Impacts would also be reduced with the implementation measures outlined in Section 2.1.13. Future projects in the Biology CESA would evaluate potential impacts to mule deer and their habitat and may require additional mitigation.

5.4.3.2 No Action Alternative

A total of the past and present actions and RFFA disturbance within the Biology CESA is 2,126 acres, which is an impact to approximately 0.3 percent of the Biology CESA. This alternative (ten acres) would impact approximately 0.001 percent of the CESA. Due to the small impact within the Biology CESA, the impacts to wildlife or their habitat from this alternative in combination with past and present actions and RFFAs would be minimal.

5.4.4 Native American Concerns

Past and Present Actions: Past and present actions that have or may impact Native American traditional resources and/or interests are Ruby Hill Mine (existing operations, expansion, and land sale), multiple past exploration activities, various Eureka Public Works projects (spring developments), oil and gas lease sales overlapping with Duckwater cattle grazing allotments, Duckwater Land Expansion proposal, and various water sources. A total of 750.2 acres of surface disturbance has been approved for mining or mineral exploration activities in the Native American Concerns CESA. Reclamation has been performed on some of this disturbance, resulting in early stages of vegetation reestablishment and habitat restoration.

RFFAs: Potential impacts to Native American resources and interests can occur as a result of the following: continued wildland fire; oil, gas, and geothermal exploration/development (as a result of leasing); land management decisions impacting existing tribal cattle grazing allotments; mineral exploration and any subsequent development proposals/plans of operations; land management decisions complicating the Duckwater land expansion proposal to the Nevada Congressional Delegation; and water source development. A total of 11.48 acres of RFFA surface disturbance would occur from mining or mineral exploration activities in the Native American Concerns CESA.

5.4.4.1 Proposed Action

Given the historic and previous smaller scale mining activities (see 5.2.1 Mineral Exploration and Mining), this Proposed Action is expected to add little to the more area specific (Eureka Mining District - Staccato Gold Resources Ltd's Lookout Mountain Gold Project) impact that may have already occurred. A total of the mineral-related past and present actions and RFFAs within the Native American Concerns CESA is 761.68 acres, which is an impact to approximately 0.1 percent of the Native American Concerns CESA (568,869 acres). The Project (266.4 acres) would impact approximately 0.05 percent of the CESA. Due to the small impact within the CESA, the impacts to Native American Concerns from the Proposed Action in combination with minerals-related past and present actions and RFFAs would be minimal.

BLM and the tribes have witnessed a recent increase in the use of lands, administered by BLM, by various groups, organizations, and individuals. New ways to utilize the land are also on the rise. Grazing; pursuit of recreation opportunities; hunting/fishing; Oil, Gas, Geothermal, and mining leasing, exploration and development; along with relatively "newer" uses such as OHV,

interpretive, and "mountain biking" trails, are among many activities that are on the rise within the BLM MLFO Administration Boundary.

It is believed that cultural resources, including tribal resources and sites of cultural, traditional, spiritual use and associated activities are increasingly in danger of losing their physical and spiritual integrity. As populations grow, public interest in utilizing lands administered by the BLM (which operates under a multiple use mandate) increases and thus the potential for the decline of culturally sensitive areas also increases. Different world views, methods of resource utilization, and social and spiritual practices and beliefs often conflict with each other. Because the traditional lands of the Western Shoshone encompass the majority of the State of Nevada, including the BLM MLFO administrative boundary, it is imperative that BLM and affected Tribes remain flexible and open to productive and proactive communication in order to assist each other in making decisions that may reduce or eliminate any adverse affects to all party's' interests, resources, and/or activities.

Tribal access to the area would be maintained and use throughout the project area would continue. However, project related activities and an increased human presence may increase the level and type of impacts within or near the project area and therefore, project specifics should be presented to the affected tribal entities for further analysis as the project continually progresses. Tribal entities would be able to attend site visits and comment on project associated activities and impacts. Project activities may be adjusted to accommodate Native American concerns. Potential effects to tribal areas of concern and any previously unknown tribal resources that may be discovered during project activities would be mitigated in accordance with NHPA, ARPA, and NAGPRA. The proposed action, in combination with outlined environmental protection measures including avoiding sensitive sites, continued opportunities for consultation, inventorying for cultural resources, avoiding sites through project design, encouraging project use on established roads and trails, and monitoring for levels of use and compliance, would not significantly contribute to cumulative impacts to Native American Traditional Values or lifeways within the study area.

5.4.4.2 No Action Alternative

Under the No Action Alternative, continued cumulative impacts to Native American Resources, sites, and activities are expected to be less than the Proposed Action.

5.4.5 Water Quality

Past and Present Actions: The CESA for surface water is the Watershed CESA (200,249 acres) and the CESA for ground water is the Ground Water and Air CESA (371,467 acres). Past actions that are likely to have impacts to ground and surface water would have included livestock grazing, fire management, material sites, material storage sites, mineral exploration, ROW maintenance, oil and gas leases, and dispersed recreation. Although wildland fires have burned in the Watershed CESA and Ground Water and Air CESA, there are no specific data that quantify the amount of sedimentation. A total of 2.3 acres of disturbance are approved for mineral activities in the Watershed CESA and 2.4 acres in the Ground Water and Air CESA. Some of this disturbance has been reclaimed or has naturally stabilized and revegetated over the years, thereby limiting the amount of sedimentation generated by this disturbance.

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

5.4.5.1 Proposed Action

A total of the past and present actions and RFFA disturbance within the Watershed CESA is 417.3 acres, which is an impact to approximately 0.2 percent of the Watershed CESA (200,249 acres). The Proposed Action (266.4 acres) would impact approximately 0.1 percent of the CESA. Surface disturbance would increase the potential for erosion and sedimentation in the surface water system. Impacts would also be reduced with the implementation of environmental protection measures outlined in Section 2.1.13 and BMPs. Due to the comparatively small impact within the CESA, the impacts to surface water quality from the Proposed Action in combination with past and present actions and RFFAs would be minimal.

A total of the past and present actions and RFFA disturbance within the Ground Water CESA is 417.9 acres, which is an impact to approximately 0.1 percent of the Ground Water and Air CESA (371,467 acres). The Proposed Action (266.4 acres) would impact approximately 0.07 percent of the CESA; therefore, the impacts to ground water from the Proposed Action in combination with past and present actions and RFFAs would be minimal.

5.4.5.2 No Action Alternative

A total of the past and present actions and RFFA disturbance within the Watershed CESA is 417.3 acres, which is an impact to approximately 0.2 percent of the Watershed CESA. This alternative (ten acres) would impact approximately 0.005 percent of the CESA. Due to the comparatively small impact within the CESA, the impacts to surface water quality from this alternative in combination with past and present actions and RFFAs would be minimal.

A total of the past and present actions and RFFA disturbance within the Ground Water and Air CESA is 417.9 acres, which is an impact to approximately 0.1 percent of the Ground Water and Air CESA. This alternative (ten acres) would impact approximately 0.1 percent of the CESA. Due to the comparatively small impact within the CESA, the impacts to ground water from this alternative in combination with past and present actions and RFFAs would be minimal.

5.4.6 Grazing Management

Past and Present Actions: The CESA for grazing management is the Range CESA (358,874 acres). Past and present actions are likely to have impacts on grazing management include fire management, material storage sites, community pits, mineral exploration, mining, ROW maintenance, oil and gas leases, geothermal leases, land sale, and dispersed recreation. Wildland fires could also result in temporary loss of forage; however, revegetation following fires or their treatments could result in an increase in herbaceous species, or forage. A total of 750.2 acres of surface disturbance has been approved for mining or mineral exploration activities in the Range CESA. Reclamation has been performed on some of this disturbance, resulting in early stages of vegetation reestablishment and habitat restoration.

RFFAs: Potential impacts to range from fire management, wildland fire, material storage sites, community pits, mining ROW maintenance, oil and gas leases, geothermal leases, land sale, and dispersed recreation could occur. In addition, noise from dispersed recreation or mining activities could affect livestock. A total of 11.48 acres of RFFA surface disturbance would occur from mining or mineral exploration activities in the Range CESA.

5.4.6.1 Proposed Action

A total of the past and present actions and RFFA disturbance within the Range CESA is 1,641.5 acres, which is an impact to approximately 0.5 percent of the Range CESA (358,874 acres). The Project (266.4 acres) would impact approximately 0.07 percent of the CESA. Due to the small impact within the CESA, the impacts to grazing management from the Proposed Action in combination with past and present actions and RFFAs would be minimal.

5.4.6.2 No Action Alternative

A total of the past, present, and RFFA disturbance within the Range CESA is 1,641.5 acres, which is an impact to approximately 0.5 percent of the Range CESA. This alternative (ten acres) would impact approximately 0.002 percent of the CESA. Due to the comparatively small impact within the CESA, the impacts to grazing management from this alternative in combination with past and present actions and RFFAs would be minimal.

5.4.7 Soils

Past and Present Actions: The CESA for soils is the Watershed CESA (200,249 acres). Past actions that could impact soils would have included livestock grazing, fire management, material storage sites, community pit, mineral exploration, ROW maintenance, oil and gas leases, and dispersed recreation that disturbed or impacted soils, or that increased erosion or sedimentation. Soil disturbance may also have been associated with wildland fires; however, fire rehabilitation and natural revegetation have likely occurred, stabilizing soil loss. There are no specific data that quantify soil loss from grazing or recreation. A total of 2.3 acres of disturbance from exploration activities has been approved within the Watershed CESA. Some disturbance from exploration and mining is reclaimed and other areas have naturally revegetated, thereby protecting soils.

RFFAs: Potential impacts to soils from livestock grazing, fire management, material storage sites, community pit, ROW maintenance, oil and gas leases, dispersed recreation, or loss of vegetative cover associated with potential wildland fires could occur.

5.4.7.1 Proposed Action

A total of the past and present actions and RFFA disturbance within the Watershed CESA is 417.3 acres, which is an impact to approximately 0.2 percent of the Watershed CESA (200,249 acres). The Proposed Action (266.4 acres) would impact approximately 0.1 percent of the CESA. Surface disturbance would increase the potential for erosion of soils. Impacts would be reduced with the implementation of environmental protection measures outlined in Section 2.1.13 and BMPs. Due to the comparatively small impact within the CESA, the impacts to soils from the Proposed Action in combination with past and present actions and RFFAs would be minimal.

5.4.7.2 No Action Alternative

A total of the past and present actions and RFFA disturbance within the Watershed CESA is 417.3 acres, which is an impact to approximately 0.2 percent of the Watershed CESA. This alternative (ten acres) would impact approximately 0.005 percent of the CESA. Due to the comparatively small impact within the CESA, the impacts to soils from this alternative in combination with past and present actions and RFFAs would be minimal.

5.4.8 Vegetation

Past and Present Actions: The CESA for vegetation is Biology CESA, which covers 734,058 acres. Past and present actions that are likely to have impacts to vegetation include livestock grazing, fire management, material storage sites, community pits, mineral exploration, mining, ROW maintenance, oil and gas exploration, land sale, and dispersed recreation. These activities are likely to have impacts to water resources or result in direct impacts to vegetation. Approximately 764.9 acres of disturbance have been approved for mineral activities in the Biology CESA (i.e., primarily associated with the Ruby Hill Mine). Reclamation has been performed on a number of the smaller minerals exploration projects in the CESA, which has resulted in early stages of vegetation reestablishment and habitat restoration.

Within the Biology CESA there are portions of 20 allotments. The carrying capacity within the Biology CESA for livestock varies between 128 and 9,709 AUMs.

RFFAs: Potential impacts to vegetation from livestock grazing, fire management, material storage sites, community pits, mineral exploration, mining, ROW maintenance, oil and gas leases, land sale, dispersed recreation, or loss of habitat with potential wildland fires could occur. Approximately 11.48 acres of RFFA disturbance would occur for mineral activities in the Biology CESA.

5.4.8.1 Proposed Action

Past and present actions and RFFA disturbance for materials storage sites and communities within the Biology CESA is 2,126 acres, which is an impact to approximately 0.3 percent of the Biology CESA (734,058 acres). The Project (266.4 acres) would impact 0.04 percent of the CESA. Due to the small impact within the Biology CESA, the impacts to vegetation from the Proposed Action in combination with past and present actions and RFFAs would be minimal. Impacts would also be reduced with the implementation measures outlined in Section 2.1.13.

5.4.8.2 No Action Alternative

A total of the past and present actions and RFFA disturbance within the Biology CESA is 2,126 acres, which is an impact to approximately 0.3 percent of the Biology CESA. This alternative (ten acres) would impact approximately 0.001 percent of the CESA. Due to the small impact within the Biology CESA, the impacts to vegetation from this alternative in combination with past and present actions and RFFAs would be minimal.

5.4.9 Visual Resources

Past and Present Actions: The CESA for visual resources is the Watershed CESA (200,249 acres). Past actions that could impact visual resources would have included fire management, material storage sites, community pit, mineral exploration, ROW maintenance, oil and gas leases, and dispersed recreation. Reclamation has been performed on some mineral exploration projects and fire rehabilitation projects have been implemented, which has resulted in early stages of vegetation reestablishment and habitat restoration. These actions have created changes in the line, form, color, and contrast within the CESA.

RFFAs: Potential impacts to visual resources from fire management, material storage sites, community pit, ROW maintenance, oil and gas leases, dispersed recreation, or loss of vegetative cover associated with potential wildland fires could occur.

5.4.9.1 Proposed Action

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

5.4.9.2 No Action Alternative

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

6 CONSULTATION AND PUBLIC INPUT

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

6.1 List of Preparers

Bureau of Land Management, Battle Mountain Field Office

Cory Gardner	Minerals
Larry Turner	Minerals
Chris Worthington	NEPA Compliance, Environmental Justice, Socioeconomics, Public Health and Human Safety
Cory Gardner	NEPA Compliance
Teresa Dixon	Cultural Resources
Gerald Dixon	Native American Concerns
Tom Darrington	Range, Vegetation, Soils
Bob Hassmiller	Floodplains/Wetlands/Riparian
Ryan Sandefur	Wildlife, Migratory Birds, Forests and Rangelands, Special Status Species
Nancy Lockridge	Lands and Realty
Todd Neville	Recreation, Visual Resources, Wilderness
Mike Vermeys	Invasive, Nonnative Species
Dana Sue Kimbal	Air Quality
Daniel Tecca	Hazardous Materials
Duane Crimmins	Wildlife
Jon Sherve	Hydrology
Lisa Walker	Fire Management

Enviroscientists, Inc.

Richard DeLong	Project Principal
Michele Lefebvre	Project Manager, Senior Environmental Specialist
Opal Adams	Assistant Project Manager, Senior Environmental Specialist
Jennifer Thies	Senior Environmental Specialist
Sara Thorne	Environmental Specialist
Chet VanDellen	GIS Specialist
Gail Liebler	GIS Specialist

BH Minerals USA, Inc.

Gary Edmondo

6.2 Persons, Groups and Agencies Contacted

Federal Agencies

Elko District P&EC, Bureau of Land Management
Rosemary Thomas, Bureau of Land Management
Robert Williams, Nevada Fish and Wildlife Office

State Agencies

Todd Suessmith, Nevada Division of Environmental Protection
Steve Foree, Nevada Department of Wildlife
Katie Miller, Nevada Department of Wildlife
D. Bradford Hardenbrook, Nevada Department of Wildlife
Dave Pulliam, Nevada Department of Wildlife
Jeremy Lutz, Nevada Department of Wildlife
Alan Coyner, Nevada Division of Minerals
Reese Tietje, Nevada State Clearing House

County Agencies

Eureka County Road Department
Carrie Dubray, Eureka County Department of Natural Resources
Chad Bliss, Eureka County Department of Natural Resources
Jake Tibbitts, Eureka County Department of Natural Resources
Jerry Todd, Eureka County Department of Natural Resources
Jim Baumann, Eureka County Department of Natural Resources
Jim Wise, Eureka County Department of Natural Resources
Ken Conley, Eureka County Department of Natural Resources
David Fanning, Nye County Public Works
Philip Williams, Lander County PLUAC Vice Chairman
Frank Whitman, Lander County PLUAC
Joy Brandt, Lander County PLUAC
Louise Lani, Land County Wildlife, PLUAC, Planning, HRBWA
Gene Etcheverry, Lander County Executive Director

Local Agencies

James Eason, Town of Tonopah

Native Americans

Duckwater Shoshone Tribe Chairperson and Natural Resources Department
Te-Moak Tribe of Western Shoshone Chairperson and Administrator
Yomba Shoshone Tribe Chairperson and Tribal EPA Department
Battle Mountain Band Council Chairperson, Vice Chair, and EPA Department
Ely Shoshone Tribe Chairperson and Tribal EPA Department

Companies

Alan Gubanich LAS Acting President
Carter Bernard, Doby George LLC
Bill Hall, Ellison Ranching Co.
Dan Fillippini, Chiara Ranch
Dan Gralian, Elko Land &Livestock Co.
Daniel Petterson, Director, SW PEER
Henry Filippini, Jr., Filippini Ranching Co., N6 Board

Jack Alexander, Synergy Resource Solutions, Inc.
John McLain, Resource Concepts, Inc.
John Hadder, Great Basin Resource Watch
Kevin Kinsella, Eureka Moly LLC
Kim Wolfe, Cortez Joint Venture C/O DBA Dean Ranch
Reed Clark, Ellison Ranching Co.
Rochard Orr, Sustainable Grazing Coalition
Rob Mrowka, Center for Biological Diversity
C Ranches Inc.
Manhattan Advisory Board
David Buhlig, Nevada Land and Resource Company
Katie Fite, Western Watersheds Project
Pete Tomera, Julian Tomera Ranches Inc.

Individuals

Bob Bottom
Brenda Younkin
Brent Jones
Brian Wood
Dan Anderson
Ed Yist
George Bernath
Jack Broughton
James Ithurralde
James Kuipers
Jim Price
Joe McGloin
Kenneth Parr
Kimberly Wolf
Kyle Walton
Leo Damele
Lorinda Wichman, Commissioner
Marjorie Sill
Mark Bennett
Mike Sansinena
Norma Darrough
Paul Mattinen
Ray Salisbury
Sam Kaster
Seth Anderson
Stanley Hooper
Stephanie Rhodes
Steven Carter
Ted Melsheimer
Tracy Kipla
Victoria Wilkins
Virginia Sanchez

7 LITERATURE CITED

ASM Affiliates, Inc. (ASM). 2008. *A Class III Cultural Resources Inventory of Approximately 6,500 Acres for the Newmont Mining Corporation Buffalo Valley Mineral Exploration Project, Humboldt and Lander Counties*. Submitted to the BLM March 2008.

Bureau of Land Management (BLM). 1983. *Draft Shoshone-Eureka Resources Mangament Plan and Environmental Impact Statement*. Battle Mountain District Office. Battle Mountain, Nevada.

_____. 1986a. *Shoshone-Eureka Resource Area, Resource Management Plan, Record of Decision*. Battle Mountain District Office. Battle Mountain, Nevada.

_____. 1986b. *Visual Resource Inventory*. BLM Manual Handbook 8410-1.

_____. 1999. *Environmental Assessment. Alta Gold Company, Lookout Mountain Exploration Project*. Eureka Counti, Nevada. March 1999.

_____. 2008. *BLM NEPA Handbook H-1790-1*.

Coates, R. 1987. *Geology of Elko County, Nevada*. Nevada Bureau of Mines and Geology. University of Nevada, Reno.

Environmental Protection Agency (EPA). 1998. *Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analysis*. U.S. EPA Office of Federal Activities, Washington, D.C.

Great Basin Bird Observatory (GBBO). 2005. *Landbirds of Nevada and the Habitats They Need: A Resource Manager's Guide to Conservation Priority Species*. Great Basin Bird Observatory Technical Report No. 05-01. Great Basin Bird Observatory, Reno, Nevada.

Lander County. 1999. *Lander County Revised Policy Plan for Federally Administered Lands*. November 1999.

Natural Resource Conservation Service (NRCS). 2008. *Web Soil Survey*. United States Department of Agriculture. http://websoilsurvey.nrcs.usda.gov/app/.

Nevada Department of Agriculture (NDA). 2009. *Nevada Department of Agriculture: Noxious Weeds Website*. http://agri.nv.gov/PLANT_NoxWeeds_index.htm

Nevada Division of Environmental Protection and the Nevada Division of Conservation Districts. 1994. *Handbook of Best Management Practices*. Adopted by the State Environmental Commission December 7, 1994.

Nevada Natural Heritage Program. *Humboldt County Rare Species List*. Last updated March 18, 2004. http://heritage.nv.gov/lists/cohumbol.htm.

Nolen, T.B. 1962. *The Eureka Mining District, Nevada*. U.S. Geological Survey Papers No. 406, Washington, D.C.

State of Nevada. 2009a. Nevada State Demographer's Office. *Nevada County Population Estimates July 1, 1986 to July 1, 2008*. (http://nsbdc.org/what/data_statistics/demographer).

____. 2009b. Nevada Department of Employment, Training, and Rehabilitation. 2008. *Nevada Workforce Informer Website* (http://www.nevadaworkforce.com).

Ulmschneider, Helen. 2004. Surveying for Pygmy Rabbits (*Brachylagus idahoensis*) Fourth Draft. June 3, 2004.

United States Census Bureau. 2009. http://factfinder.census.gov.

Western Regional Climate Center (WRCC). 2009. Battle Mountain, Nevada (260688). *Period of Record Monthly Climate Summary*. http://www.wrcc.dri.edu/summary/Climsmnv.html.