# United States Department of the Interior

## Bureau of Land Management

## Ely Field Office — July 2004

# Easy Junior Mine Closure Project

Environmental Assessment

NV–040-04-17

Case File # NVN0068442

## *MISSION STATEMENT*

The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times. Management is based upon the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation, rangelands, timber, minerals, watershed, fish and wildlife, air and scenic, scientific and cultural values.

# ENVIRONMENTAL ASSESSMENT

## Easy Junior Mine Closure Project

NV-040-04-16

Bureau of Land Management

Ely Field Office

HC33 Box 33500

Ely, Nevada 89301

**July 2004**

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## GLOSSARY

| | |
|---|---|
| Attainment Area | An area considered to have air quality as good as or better than the national ambient air quality standards as defined in the Clean Air Act. An area may be an attainment area for one pollutant and a non-attainment area for others. |
| Barren Pond | A storage pond for solution from which gold has been extracted. |
| Ecotoxicity | Adverse effects of chemical or physical agents, and natural products on populations and communities of plants, animals and human beings. |
| Growth Media | A material which is capable of supporting vegetation. |
| Groundwater | All subsurface water comprising the zone of saturation, including perched zones of saturation, which could produce usable water. |
| Hydraulic Conductivity | The capacity of a porous medium to transmit water. The rate at which fluid can move through a permeable medium depends on properties of the fluid (viscosity and specific weight) and properties of the medium (intrinsic permeability). |
| Lithology | The physical and chemical characteristics of a rock. |
| Non-attainment Area | Area that does not meet one or more of the National Ambient Air Quality Standards for the criteria pollutants designated in the Clean Air Act. |
| Ore | Naturally occurring material from which a metallic mineral of economic value can be extracted |
| Permeability | The property or capacity of a porous rock, sediment, or soil for transmitting a fluid; it is a measure of the relative ease of fluid flow under unequal pressure. |
| Pregnant Pond | A storage pond for solution from which gold has not been extracted. |
| Reclamation | Actions performed during or after an exploration project or mining operation to shape, stabilize, revegetate or otherwise treat the land in order to return it to a safe, stable condition consistent with the establishment of a productive post mining use of the land. |
| Revegetation | The establishment of pre-exploration or pre-mining vegetation or a comparable vegetative cover. |
| Ruminants | Any of various cud-chewing hoofed mammals having a stomach divided into four (sometimes three) compartments. |
| Runoff | The part of precipitation appearing in surface streams. |
| Spent Heap | An ore heap from which gold has been extracted by dissolving minerals or metals using chemicals. During heap leaching of gold, a cyanide solution percolates through crushed ore heaped on an impervious pad or base pads. |
| Vadose zone | A subsurface zone containing water under pressure that is less than atmospheric pressure. |
| WAD Cyanide | Weak acid dissociable cyanide that is readily released from cyanide-containing complexes when the pH is lowered. |

# ACRONYMS

| | |
|---|---|
| amsl | above mean sea level |
| bgs | below ground surface |
| BLM | Bureau of Land Management |
| BMPs | Best Management Practices |
| BOR | U.S. Bureau of Reclamation |
| CESA | Cumulative Effects Study Area |
| EA | Environmental Assessment |
| gpm | gallons per minute |
| HELP | Hydrologic Evaluation of Landfill Performance |
| HMA | Horse Herd Management Area |
| MBTA | Migratory Bird Treaty Act |
| NDEP | Nevada Division of Environmental Protection |
| NEPA | National Environmental Policy Act |
| RAMS | Western Region Restoration of Abandoned Mine Sites |
| RMP | Resource Management Plan |
| ROD | Record of Decision |
| SOPs | Standard Operating Plans |
| TDS | Total Dissolved Solids |
| TPH | total petroleum hydrocarbons |
| USACE | U.S. Army Corps of Engineers |
| VRM | Visual Resource Management |

# 1. INTRODUCTION

The Restoration of Abandoned Mine Sites (RAMS) Program utilizes the U.S. Army Corps of Engineers' (USACE) environmental authorities to provide technical, planning, and design assistance to federal and non-federal interests in carrying out projects to address water quality problems caused by drainage and related activities from abandoned and inactive non-coal mines. In addition, research is included as a component of the program and is designed to:

- Provide applied engineering and scientific support to allow the efficient and cost-effective performance of projects intended to manage drainage from abandoned and inactive non-coal mines;
- Restore and protect streams, rivers, wetlands, other water bodies, and riparian areas degraded by drainage from abandoned and inactive non-coal mines;
- Demonstrate management practices and innovative and alternative treatment technologies to minimize or eliminate adverse environmental effects associated with drainage from abandoned and inactive non-coal mines; and
- Develop and populate a database of remediation technologies as specified in Section 560 of the Water Resources Development Act of 1999.

In June 2001, the Nevada Interagency Abandoned Mine Lands Environmental Task Force proposed to the USACE Western Region Restoration of Abandoned Mine Sites a list of abandoned mine land projects scattered across the state of Nevada that required extra funding for additional assessment prior to beginning reclamation. One of the projects identified in this proposal included the Easy Junior Mine. The Easy Junior Mine is located within the boundaries of the Sacramento District of the USACE. The federal partners with the USACE for this project are the U.S. Bureau of Land Management and the U.S. Bureau of Reclamation (BOR).

The Easy Junior Mine site is located on public lands administered by the U.S. Department of Interior, Bureau of Land Management (BLM) - Ely, Nevada, Field Office. The site is located approximately 45 miles west of Ely, Nevada and 15 miles south of U.S. Highway 50 in the foothills of the Pancake Range. The proposed closure project is located in White Pine County as shown in Figure 1. The proposed Project, located within portions of Township 15 North, Range 56 East, sections 4, 5, 8, and 9, would be administered by the Ely Field Office BLM.

The USACE and BLM propose to close and reclaim the spent heap, ponds, and draindown management system, dismantle the remaining structure, remove debris, and, if funding permits, reclaim areas on the waste rock pile that were not successfully reclaimed in the past. Work is projected to begin in July of 2004. No new disturbance outside of the previously authorized mine boundary is projected unless on-site borrow sources prove inadequate. About 71 acres of existing disturbance would be reclaimed.


| | | | |
|---|---|---|---|
| REFERENCE | DESIGNED | | FIGURE 1 |
| | DRAWN | 5/04 | BUREAU OF LAND MANAGEMENT |
| | CHECKED | | EASY JUNIOR MINE |
| | APPROVED | | WHITE PINE COUNTY, NEVADA |
| REVISIONS | No. DESCRIPTION BY DATE | | LOCATION MAP |
| | | | SCALE: 1"=60 MILES |
| | | | JOB NO. 148803 |
| | | | DWG NAME 148803-101 |
| | | | REVISION A |

This Environmental Assessment (EA) was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and in compliance with applicable regulations and laws passed subsequently, including the President's Council on Environmental Quality regulations, U.S. Department of Interior requirements, and guidelines listed in the BLM Manual Handbook H-1790-1.

## 1.1 PROJECT BACKGROUND

Mining at the Easy Junior Mine began in late 1989 and continued through 1990. The mine was maintained in care and maintenance status during 1991 and 1992; mining operations began again in 1993 and continued through 1994. Both crushed and run-of-mine ore was placed on the heap. Gold was recovered using conventional cyanide leach technology. Pregnant solution was collected in a sump and pumped through carbon columns. Barren solution was collected in a pond and recirculated back to the heap. Loaded carbon was transported to Alta's Robinson Project for precious metal recovery. Leaching continued through late 1996; cyanide addition to the barren solution was discontinued in October 1996. Table 1-1 presents the existing authorized and reclaimed disturbance.

**Table 1-1: Authorized and Existing Disturbance at the Easy Junior Project Site**

| Disturbance Type | Authorized Disturbance (acres) | Actual Disturbance (acres) | Area Reclaimed (acres) |
|---|---|---|---|
| Waste rock pile | 84.5 | 67.0 | 49.0 |
| Leach pad | 49.5 | 30.2 | - |
| Haul roads | 7.2 | 24.8 | 8.2 |
| Site roads | 5.2 | 1.7 | - |
| Borrow pits | 10.0 | 10.0 | 10.0 |
| Ponds | 25.8 | 2.9 | - |
| Process/shop area | 22.1 | 21.9 | - |
| Crusher area | 17.6 | 17.8 | - |
| Pit | - | 32.7 | - |
| Drill roads | - | 15.3 | 15.3 |
| Water Well pipeline | - | 21.4 | 21.4 |
| Brushed areas | 6.4 | 1.4 | - |
| **Total** | **228.3** | **177.7** | **103.9** |

Source: Alta, 1999

The spent heap covers about 28.5 acres and contains about 1.7 million tons of spent ore. Draindown flow varies seasonally between about 0.4 and 2 gallons per minute (gpm). The heap was constructed to a height ranging between 60 and 75 feet above ground surface with side slopes at 2.3H:1V. The pregnant solution sump and pond, the barren solution pond, and a stormwater pond are located downgradient of the heap as shown on Figure 2. Table 1-2 presents recent solution analysis of the draindown solution from the heap. Sulfates, nitrates, total dissolved solids (TDS), and selenium are the constituents of most concern.

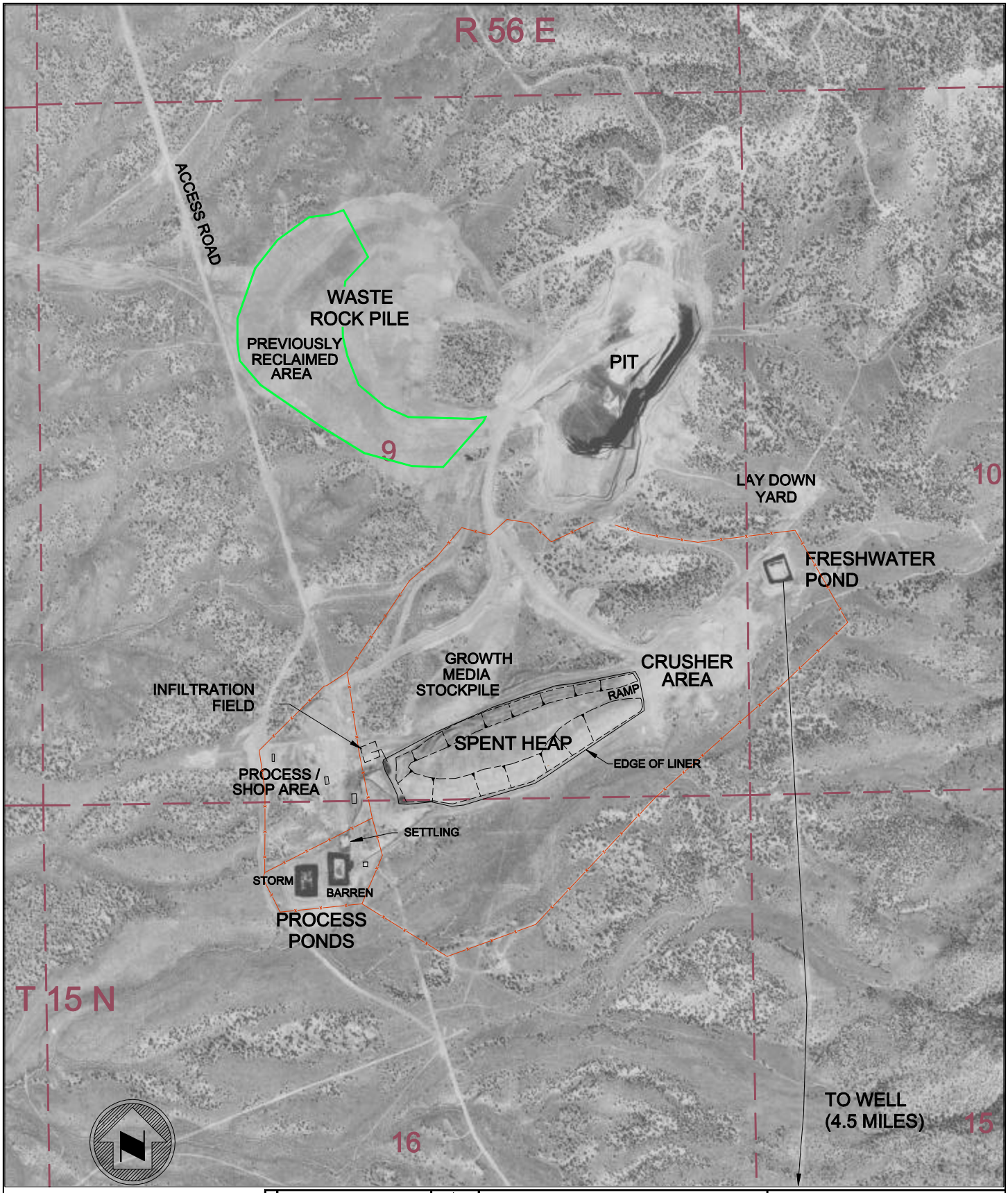


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FIGURE 2

BUREAU OF LAND MANAGEMENT

EASY JUNIOR MINE
EXISTING SITE CONDITIONS

| SCALE: 1"=1000' | REVISION |
|---|---|
| JOB NO. 148803<br>DWG NAME 148803-102 | A |

**Table 1-2: Constituents in Draindown Solution Compared to Nevada Water Quality Standards (11/22/02)**

| Constituent | Nevada Drinking Water Standard (mg/L) | Draindown Solution Concentration (mg/L) |
|---|---|---|
| Aluminum | 0.05-0.2 | 0.3 |
| Antimony | 0.006 | 0.007 |
| Arsenic | 0.05 | 0.15 |
| WAD Cyanide | 0.2 | 0.098 |
| Mercury | 0.002 | 0.0059 |
| Nitrate/Nitrate | 10 | 230 |
| Selenium | 0.05 | 0.12 |
| Sulfate | 250-500 | 1,500 |
| Thallium | 0.002 | 0.011 |
| Total Dissolved Solids | 500-1,000 | 3,800 |

Source: CDM, 2002, Appendix B

Fresh water rinsing of the spent heap began in October 1996 and continued through June 1997. Rinsing was discontinued when the weak acid dissociable cyanide concentrations decreased to 0.1 milligrams per liter and the pH stabilized at 8.1 standard units. Approximately seven million gallons of neutralized draindown fluid was land applied in an area immediately south of the heap (CDM, 2002).

Prior to the completion of reclamation activities, Alta filed for bankruptcy. During the initiation of bankruptcy proceedings, Alta discontinued site reclamation; however a surety bond was obligated for reclamation purposes. Alta submitted a reclamation permit application in 1993 and addressed agency comments in 1996; a reclamation permit was issued by the Nevada Division of Environmental Protection (NDEP). A water pollution control permit was issued for the site in 1990 and renewed in 1995. In compliance with the water pollution control permit, a *Final Permanent Closure Plan* was submitted to NDEP. Some reclamation and closure tasks were initiated at the site including:

- The waste rock pile was sloped and about two thirds of the surface was covered with growth media before the growth media stockpile was consumed;
- A draindown fluid collection system and infiltration field were constructed;
- The pit was bermed and the access road was fenced;
- The crusher superstructure was removed as were most ancillary buildings; and
- The main processing plant was dissembled and removed from the site.

In September 1998, the draindown fluid was routed to the infiltration field down gradient of the spent heap. The infiltration field is comprised of two six-inch pipes that flow from the northwest and southwest corners of the spent heap. These two pipes join together in a single six-inch pipe subsurface and upstream

of a distribution box which daylights at the surface for monitoring and sample collection. Four perforated 1.25-inch diameter pipes exit the distribution box to the west. The four pipes are about 100 feet in length and spaced about 20 feet apart, and appear to be buried about three feet bgs (J. Pennington, Personal Communication).

Major components not reclaimed include the spent heap, the settling pond, the barren ponds, the stormwater (overflow) pond, the fresh water pond, and the crusher foundation. Building foundations, miscellaneous outbuildings, and piping remain. Haul roads and access roads are intact throughout the site. A fresh water well located about 4.5 miles south and east of the site and a buried pipeline are still intact. The fresh water well was located at this site because of the inability to locate a reliable water supply on-site at a reasonable depth.

Although the majority of the waste rock pile was reclaimed, about ten to 20 acres on the east side of the pile has no topsoil with little to no revegetation. Vegetation is established over the remaining areas with some bare spots, which appear to be caused by low pH resulting from sulfide reduction in the pile. Hydrated lime has been selectively placed over barren areas including some fumaroles observed at these locations.

## 1.2 NEED FOR THE PROPOSAL

The objective of the proposed Project is to reclaim the spent heap and associated disturbance. The purpose of the Project is to protect surface and groundwater quality, minimize environmental risk, and restore productive land use to the greatest extent practicable.

## 1.3 ISSUES

The following issues and concerns were raised during the scoping process:

- Potential for discharge to surface and ground water;
- Impacts to the vadose zone; and
- Potential for ecotoxicity.

These issues are addressed within their respective sections of Chapter 3.

## 1.4 RELATIONSHIP TO PLANNING STATEMENT

An Environmental Assessment was written for the Easy Junior Mine in 1989 and the DR/FONSI was signed on February 3, 1989. Except for closure of the spent heap and associated disposal of the draindown fluid, other aspects of reclamation that could occur under the RAMS program have already been analyzed and authorized under the initial EA and mine permitting procedures. Groundwater and environmental concerns from long-term draindown discharging from the spent heap were not addressed in the original EA. Any additional closure components, not foreseen in the original EA, now require NEPA analysis.

Although the Egan Resource Management Plan (RMP) is silent on minerals actions, the Proposed Action is consistent with the goals and objectives of the RMP. The Proposed Action and the No Action alternative are also consistent with the White Pine County Public Land Use Plan (1998), which states, "Recognize that the development of Nevada's mineral resources is desirable and necessary to the nation, the state, and White Pine County. Retain existing mining areas and promote the expansion of mining operations and areas."

# 2 PROPOSED ACTION AND ALTERNATIVES

## 2.1 PROPOSED ACTION

The USACE, BOR, and BLM propose to stabilize and revegetate the spent heap, ponds, draindown management system, dismantle the remaining structures, remove debris, and, if funding permits, reclaim areas on the waste rock pile that were not successfully reclaimed in the past. Work is projected to begin in July 2004. No new disturbance outside of the previously authorized mine boundary is projected. Figure 3 presents a general schematic of the proposed activities.

The spent heap, presently at a slope of 2.3H:1V, would be recontoured to a side slope of about 3H:1V. The toe of the regraded leach pad would extend beyond the limit of the liner. This configuration is applicable due to favorable draindown chemistry, low flow rate, and extensive depth to groundwater. Some variation on final regraded slopes is expected. Side slopes would be regraded to blend with surrounding topography. See Figure 4.

Borrow material for the soil cover on the spent heap would consist of a combination of calcareous alluvium that lies near the Fresh Water Pond plus the existing topsoil stockpile. A 12-inch thick soil cover would be placed over the heap to increase the moisture holding capacity, potential evaporation, and evapotranspiration thereby reducing long-term infiltration. The results of soil cover modeling indicated a 12-inch cover would be optimum to minimize flow from meteoric events into the heap. Some material applied to the spent heap cover may be excavated from the adjacent growth media stockpile.

Piping and other debris remaining from operations would be buried in the regraded heap with consideration for future re-use of the leach pad. The top surface of the spent heap would be regraded with a low-angle slope toward the hillside (access ramp). Regrading would increase the dispersion of precipitation that falls on the top of the heap and reduce erosion on the side slopes of the heap. Diversion ditches would prevent surface water from precipitation events from entering the reclaimed heap, ponds and borrow areas.

The existing draindown fluid distribution system and infiltration field would be operated in its current configuration. The distribution box would be leveled and stabilized to re-establish even distribution to pipes.

Structures, foundations, equipment and debris would be salvaged or reduced and buried in a Class III landfill that would be created in one of the lined ponds. Exposed liner from draindown conveyance channel liners would be cut, folded and buried in the landfill. On-site material such as fencing, steel, piping, and other materials may be salvaged.

Process pond liners would either be covered with suitable fine-grained borrow soil and folded over to encapsulate facility debris or folded over and then filled with debris. Existing berm soils would be used to bury the contents resulting in a mounded configuration for positive drainage. Pond sludges, with the exception of the settling pond, were previously tested and demonstrated to meet regulatory requirements

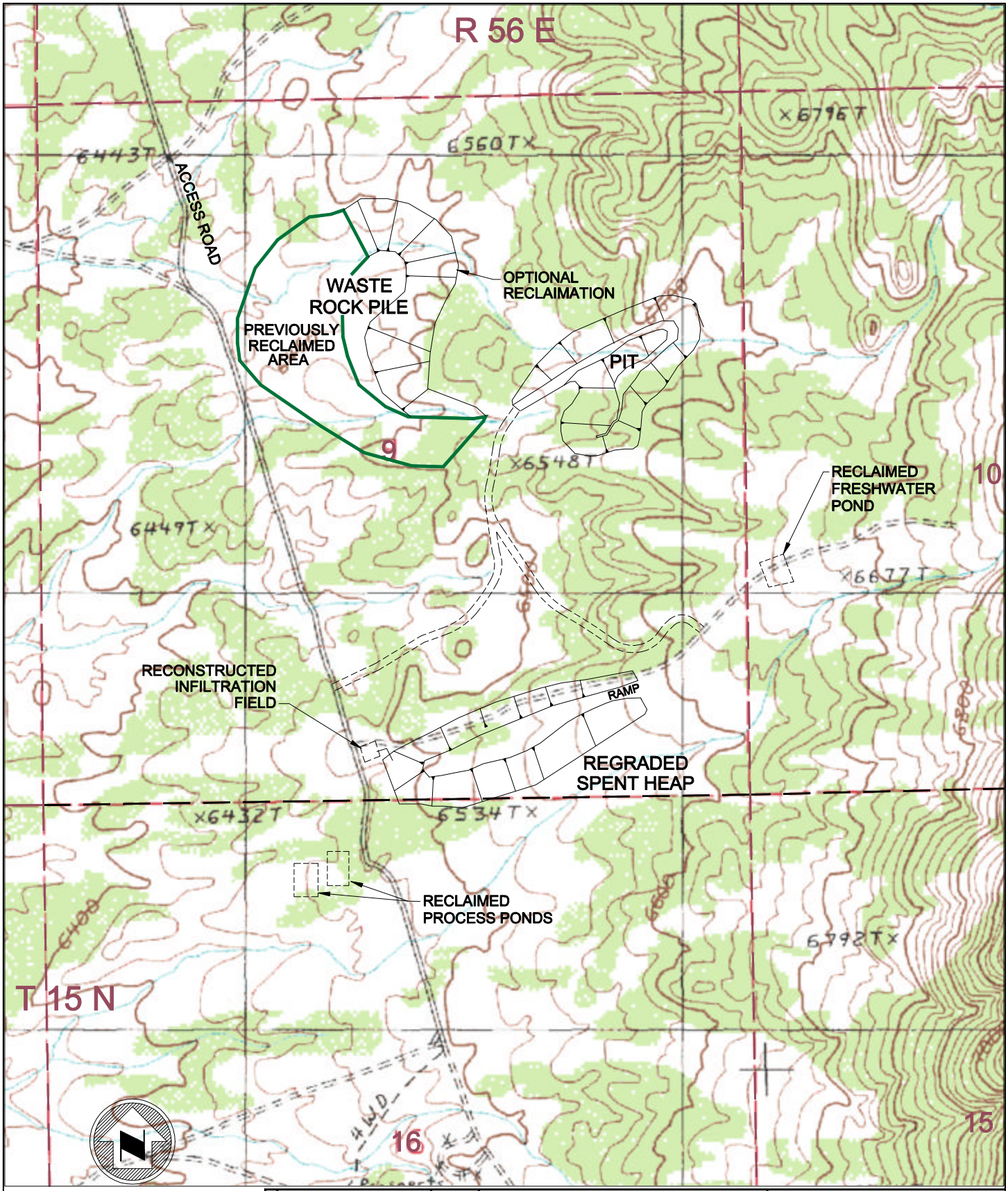


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FIGURE 3

BUREAU OF LAND MANAGEMENT

EASY JUNIOR MINE

POST-RECLAMATION AND CLOSURE LAYOUT

| SCALE: 1"=1000' | REVISION |
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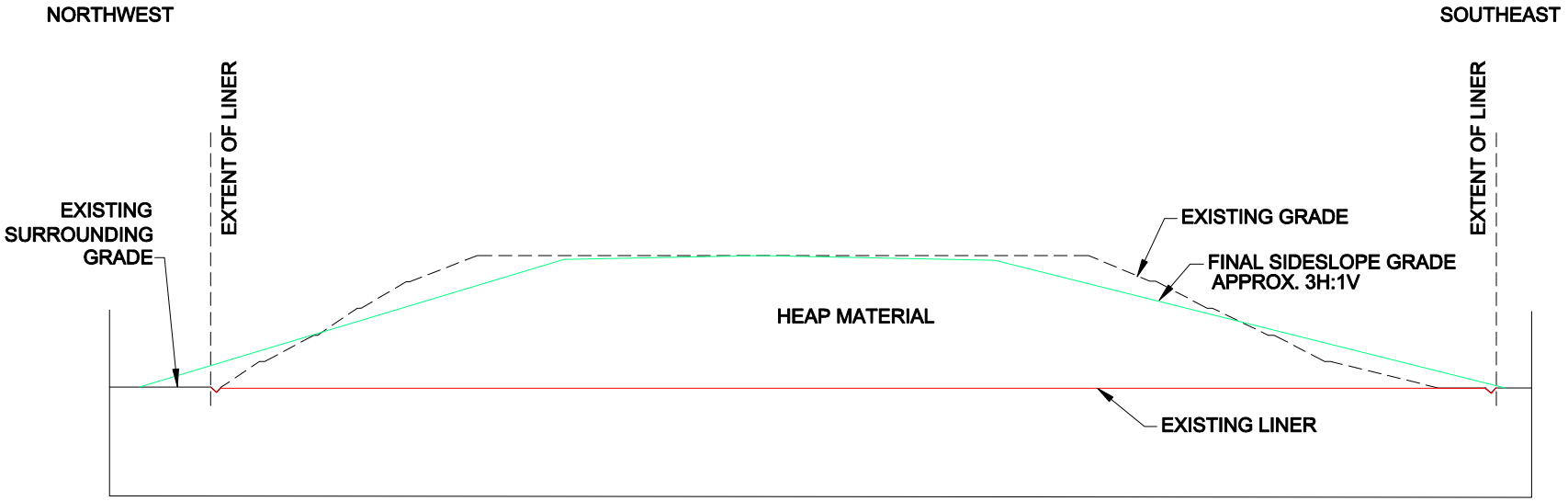


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FIGURE 4

BUREAU OF LAND MANAGEMENT

EASY JUNIOR MINE
SPENT HEAP SCHEMATIC SECTION

SCALE: NOT TO SCALE

REVISION A

JOB NO. 148803
DWG NAME 148803-105

for burial. The settling pond sludge chemistry would be characterized prior to backfilling. The fresh water pond would be backfilled with existing stockpiles and adjacent berms, and closed in place.

If funding permits, reclamation would be completed on the waste rock pile. Local low-pH areas would be amended with hydrated lime and/or crushed limestone. These areas, as well as remaining unreclaimed waste rock, would be covered with six inches of borrow soil and revegetated.

Revegetation of recontoured areas resulting from activities outlined in this section would be conducted during Fall 2004. The existing mine perimeter fence would remain until reclaimed areas can support the post-mining land use. The preliminary seed mixture (Table 2-1) and application rates are subject to modification and would be determined prior to reseeding. Because the Project would be within an area previously invaded by cheatgrass, the disturbance may be revegetated with short-term, aggressive non-native species to out-compete cheatgrass. Table 2-2 shows the proposed areas that would be reclaimed.

**Table 2-1: Seed Mix**

| Name | Seeds/Pound | Application Rate Pound/Acre | Seed/Square Foot |
|---|---|---|---|
| Thickspike Wheatgrass *Elymus lanceolatus spp. lanceolatus* | 154,000 | 2.0 | 7 |
| Magnar Great Basin Wildrye *Leymus Cinerus* | 95,000 | 3.0 | 6 |
| Bluebunch Wheatgrass *Pseudoroegneria spicata spp.spicata* | 140,000 | 3.0 | 10 |
| Indian Ricegrass *Oryzopsis hymenoides* | 141,000 | 2.0 | 6 |
| Squirrel Tail *Elymus Elymoides* | 192,000 | 1.0 | 4 |
| Palmer Penstemon *Penstemon Palmeri* | 610,000 | 0.25 | 3 |
| Appar Blue Flax *Linum Lewisii* | 293,000 | 0.5 | 3 |
| White Yarrow *Achillea Millefolium* | 2,770,000 | 0.1 | 6 |
| Nevada Mormon Tea *Ephedra Nevadensis* | 19,900 | 1.0 | 0.5 |
| Rubber Rabbitbrush *Crysothamnus Nauseosus* | 400,000 | 0.5 | 4 |
| Fourwing Saltbrush *Atriplex Canescens* | 52,000 | 2.0 | 2 |
| TOTAL[1] | | 15.35 lbs/ac | 51.5 seeds/sq ft |

[1]Broadcast seeding rate which is double the drill seed rate

**Table 2-2: Proposed Reclamation Area at the Easy Junior Project**

| Type | Acres |
|---|---|
| Spent heap | 26.4 |
| Ponds | 13.4 |
| Facilities | 13.7 |
| Ancillary disturbance | 12.7 |
| Waste rock pile[1] | 5.0 |
| **Total** | **71.2** |

[1] If funding permits

### 2.1.1 Environmental Protection Measures

Throughout this project, BLM would initiate Best Management Practices (BMPs) to prevent unnecessary and undue degradation to the environment.

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

Employees and contractors would be educated to identify noxious weeds or invasive, non-native species that could occur in the Project Area. Should noxious weeds be identified, BLM would take appropriate measures to prevent their spread. Standard Operating Plans (SOPs) designed to reduce the introduction and spread of weeds during reclamation activities that would be implemented (if applicable) during reclamation activities include:

- All equipment, both incidental and those of implementation, would be cleaned of all vegetative debris prior to mobilization to ensure no noxious or invasive weeds are brought to the site;
- All hay or other vegetation used for mulch would have a pasture certification or identification that is free of weeds on the Nevada Noxious Weed list, and/or a feed lot certification stating that weed free feed was consumed by livestock in the production of organic (manure) fertilizers;
- All seed used for reclamation activities would be tested and found to be free of weeds on the Nevada Noxious Weed list;
- Prior to entry of vehicles and equipment to a project area, areas of concern would be identified and flagged in the field by a weed scientist or qualified biologist;
- Gravel pits and fill sources would be inspected to identify weed-free sources. Gravel and fill to be used in relatively weed-free areas must come from weed-free sources. Mineral material reclamation would be inspected for infestation of noxious weeds; and
- Off-road equipment would be cleaned (power or high pressure cleaning) of all mud, dirt, and plant parts before entering and/or departing the site. If vehicle washdowns occur on public land, the location of the washdown sites would be recorded with a GPS and reported to the Authorized Officer.

### *Control of Air Emissions*

Project-related traffic would observe prudent speed limits to maintain public safety, protect wildlife and livestock, and minimize dust (particulate) emissions.

### *Erosion and Sediment Control*

When drainages must be crossed with a road, BMPs would be followed to minimize the surface disturbance and erosion potential. BMPs such as silt fences and weed-free straw bales would be used when necessary for erosion and sediment control.

### *Cultural Resources*

The proposed activities would occur on areas previously surveyed and cleared for cultural resources. Should new cultural resources be identified, activities would cease immediately and the BLM archeologist would assess the resources to determine their eligibility for the National Register of Historic Places. A cultural resources survey would be conducted on the existing borrow area should the area need to be used and enlarged.

### *Wildlife*

Activities associated with the Proposed Action would take place on existing disturbance. If borrow sources are inadequate and new disturbance is required, appropriate measures would be taken to protect wildlife and their habitat. Surveys would be performed on existing disturbance where nesting is likely. Where possible, activities would be timed to prevent destruction of active bird nests or young birds during the avian breeding season (May15 to July 31, annually) to comply with the Migratory Bird Treaty Act (MBTA). If disturbing activities are unavoidable, BLM would survey areas proposed for immediate disturbance for the presence of active nests.

If active nests are located, or if other evidence of nesting is observed (mating pairs, territorial defense, carrying nesting material, transporting of food), the area would be avoided to prevent destruction or disturbance of nests until the birds are no longer present. Avian surveys would be conducted only during the avian breeding season and immediately prior to BLM conducting activities that result in disturbance. After such surveys are performed and disturbance created, BLM would not conduct any additional disturbance during the avian breeding season without first conducting another avian survey. After July 31, closure activities would continue; no further avian surveys, in compliance with MBTA, would be conducted until the next year.

To minimize impacts to sage grouse, BLM would avoid known leks/strutting grounds. No surface disturbance would be allowed within an active sage grouse lek. No surface use would be allowed within one half mile of an active sage grouse lek from midnight until 10 a.m. during the period March 15 through May 1.

***Solid and Hazardous Waste***

Project-related refuse would be disposed on-site in a Class III landfill. In the event hazardous or regulated material such as diesel fuel is spilled, measures would be taken to control the spill and the NDEP would be notified as per regulations.

## 2.2 ALTERNATIVES TO THE PROPOSED ACTION

This section identifies alternatives to the Proposed Action.

### 2.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be approved. The spent heap would remain unreclaimed and with sparse surface vegetation, steep side slopes, and surface debris. The draindown fluid would continue to flow to the existing infiltration field. The solution ponds would remain open and would continue to impound meteoric water. Interior fencing would remain in a state of disrepair that could allow access by wildlife, wild horses, and the public. The open areas on the waste rock pile would likely persist and not revegetate via colonization.

### 2.2.2 Alternative Action

This alternative is similar to the Proposed Action in that the spent heap would be recontoured and covered with 12 inches of growth media; however, one or two low cost evaporation basins with a new infiltration field would be constructed. The existing infiltration field would be bypassed. Certain other components of the Proposed Action may not be completed as part of this alternative. Components that may not be completed include waste rock pile reclamation, covering road and ancillary disturbances with growth media, and backfill of the Fresh Water Pond.

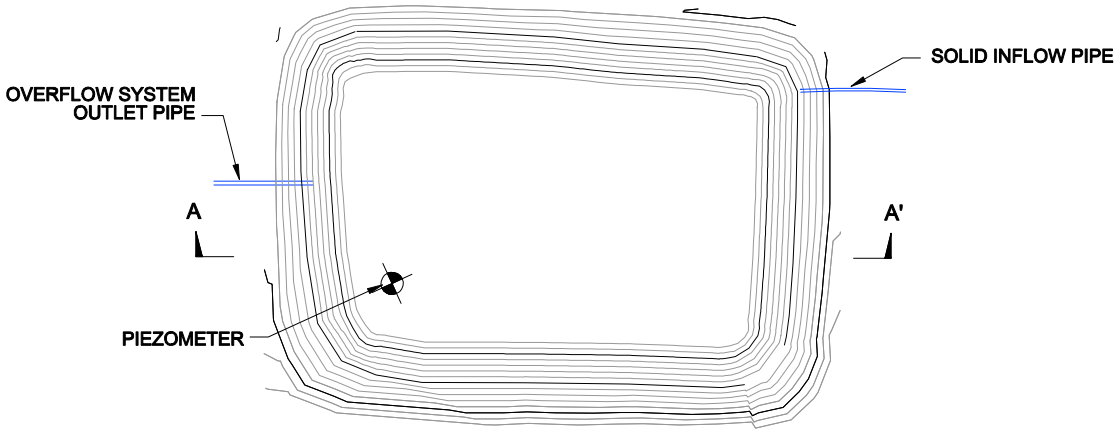
Prior to pond backfilling, impounded meteoric water would be pumped from the selected process pond(s) and sprayed over the spent heap to evaporate the liquid. The pond liner would be inspected and repaired where necessary. Local material would be used to backfill the pond; backfilling operations would be conducted to prevent accidental puncture of the liner. The upper three to four feet of the basin would consist of sized gravel to promote airflow and evaporation and prevent establishment of vegetation. See Figure 5.

Draindown fluid would be rerouted from the infiltration field to the evaporation basin; fluid inflow would be via a single pipe buried approximately four feet bgs. The basin would be allowed to fill and operate in the full condition. An overflow would be constructed in the event that the outflow exceeded the evaporation capacity of the basin. This overflow would include a buried pipeline and sampling port with a valve. A piezometer would be installed for monitoring purposes. Overflow fluid from the evaporation basin(s) would flow to a new infiltration field. The existing infiltration field would be decommissioned.

### 2.2.3 Alternatives Considered But Eliminated From Further Analysis

The following alternative was considered and eliminated from further analysis:

- Construct a more advanced evaporation basin system that enhances evaporation via a network of near surface perforated pipe and selected basin fill material. The alternative was eliminated due to the extra cost and marginal incremental benefit over that of the Alternative Action..




ALTERNATIVE ACTION EVAPORATION BASIN - TYPICAL PLAN VIEW

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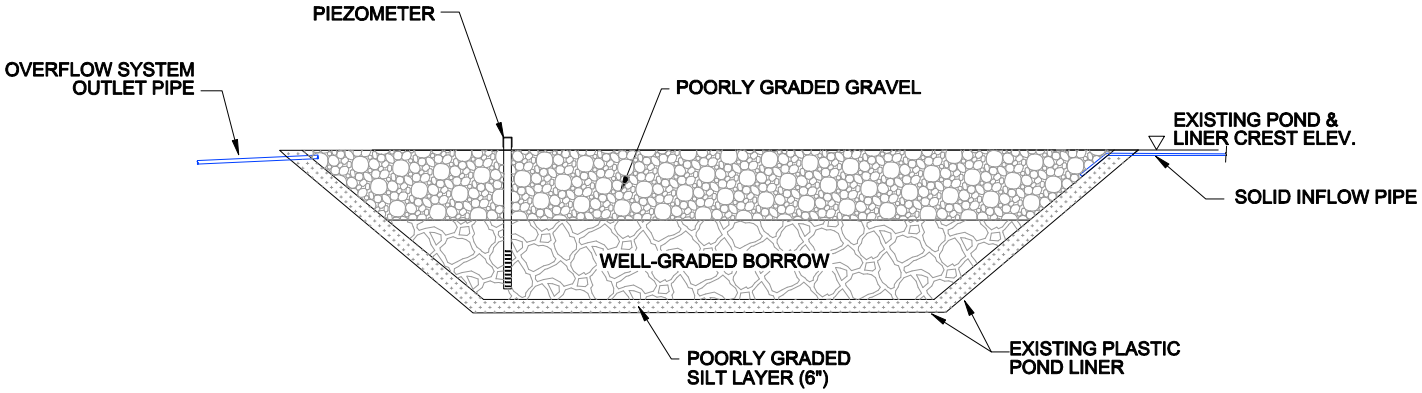


ALTERNATIVE ACTION EVAPORATION BASIN - TYPICAL SECTION A-A'

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|---|---|---|---|
| REFERENCE | DESIGNED ENG | 5/04 | FIGURE 5 |
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| | CHECKED | | EASY JUNIOR MINE |
| | APPROVED | | ALTERNATIVE ACTION EVAPORATION BASIN |
| REVISIONS | No. DESCRIPTION DATE | | SCHEMATIC PLAN & SECTION |
| | | | SCALE: NOT TO SCALE / REVISION |
| | | | JOB NO. 148803 |
| | | | DWG NAME 148803-103 / A |

# 3 DESCRIPTION OF THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES

## 3.1 INTRODUCTION

The proposed closure project is located about 45 miles southwest of Ely, Nevada in White Pine County. The proposed project would be located on public land administered by the BLM – Ely Field Office. The Project Area can be accessed via U.S. Highway 50 traveling west from Ely and heading south on the Mount Hamilton Mine Road. The topography in the area is typical of that found in the Basin and Range Physiographic Province of the western United States. Elevations in the Project Area range from approximately 5,540 to 6,600 feet above mean sea level (amsl). Characteristic Basin and Range vegetation consisting of sagebrush, and pinyon and juniper communities, dominate the landscape.

The Critical Elements of the Human Environment, as identified by BLM Manual 1790-1, which have been considered for this EA, are listed in Table 3-1. Elements that may be affected are further described in this EA. Rationales for those elements that would not be significantly or adversely affected are listed in Table 3-1.

**Table 3-1: Critical Elements of the Human Environment and Rationale for Detailed Analysis for the Proposed Easy Junior Closure Project**

| Critical Element | No Effect | May Affect | Not Present | Rationale |
|---|---|---|---|---|
| Air Quality | | X | | Short- term dust production from construction activities. |
| Areas of Critical Environmental Concern | | | X | Resource is not present. |
| Cultural Resources | | X | | The Project Area has been surveyed prior to initial disturbance; activities will occur on existing disturbance. If borrow sources on undisturbed ground are needed, they would be surveyed for cultural resources. |
| Environmental Justice | X | | | No minority or low-income groups would be affected by disproportionately high and adverse health or environmental effects because this action only involves exploration drilling. |
| Farm Lands (prime or unique) | | | X | Resource is not present. |
| Flood Plains | | | X | Resource is not present. |
| Native American Religious Concerns | X | | | No concerns were expressed during Native American coordination meetings. |
| Noxious weeds and Invasive, Non-native Species | | X | | Surface disturbance and heavy equipment on-site may increase the risk of invasive, non-native, species establishment. |
| Special Status Species | X | | | The Project Area has been surveyed prior to initial disturbance; activities will occur on existing disturbance. |
| Wastes (hazardous or solid) | | X | | BLM would control wastes in accordance with state and federal regulations. |
| Water Quality (drinking/ground) | | X | | Volume and flow rate of draindown fluid would be reduced. Potential to contaminate groundwater. |
| Wetlands/ Riparian | | | X | Resource is not present. |
| Wild and Scenic Rivers | | | X | Resource is not present. |
| Wilderness | | | X | The Proposed Action does not occur within any Wilderness Area, Wilderness Study Area, or Wilderness Inventory Area. |

In addition to the Critical Elements of the Human Environment, the BLM must consider other resources that occur on public lands, or issues that may result from the implementation of the Proposed Action. The potential resources, uses, and issues that may be affected are listed in Table 3-2. A brief rationale for either considering or not considering the issue or resource further is provided. The resources, uses, and issues that are considered in the EA are described in this EA and are analyzed in the Environmental Consequences section.

**Table 3-2: Other Resources and Issues, and Rationale for Detailed Analysis for the Proposed Easy Junior Closure Project**

| Resource or Issue | No Effect | May Affect | Not Present | Rationale |
|---|---|---|---|---|
| Lands/Access | X | | | Closure activities addressed in this EA would have no effect on Lands/Access. |
| Soils | | X | | Activities would return stockpiled soils to the land surface. Concern to vadose zone and surface soils with contaminants of concern could occur. |
| Geology/ Minerals | X | | | Activities would not affect or remove geological resources. |
| Paleontological Resources | X | | | Paleontological resources identified in the vicinity of the Project Area do not have critical scientific or educational value (BLM 1995). |
| Vegetation | | X | | Activities would partially reestablish vegetation. Potential ecotoxicity of vegetation exposed to draindown fluid could occur. |
| Livestock Grazing | | X | | Activities would partially reestablish vegetation and habitat. Potential exposure to vegetation that accumulated metals of concern could occur. |
| Wildlife (Including Migratory Birds) | | X | | Activities would partially reestablish vegetation and habitat. Reduced on-site hazards to wildlife and potential exposure to contaminants of concern. |
| Wild Horses | | X | | Activities would partially reestablish vegetation and habitat. Potential exposure to vegetation that accumulated metals of concern could occur. |
| Recreation | | X | | Activities would partially reestablish vegetation and habitat. Potential exposure to soils and blowing dust with high levels of metals would be reduced for area recreationists. |
| Visual Resource Management | | X | | The Project Area is located within a Class IV visual resource management class. Recontouring and revegetation of the heaps would improve visual aesthetics of the area. |
| Forestry | X | | | Closure activities addressed in this EA would have no effect on Forestry. |
| Socioeconomics | X | | | Activities would not alter the current economic status of the area. |

Based on the review of existing baseline data or surveys conducted in preparation of this EA, BLM specialists have identified the following resources for further analysis:

- Water quality;
- Air quality;
- Soils;
- Vegetation including woodlands;
- Noxious weeds and invasive, non-native species;
- Wildlife;
- Livestock grazing;
- Wild horses;
- Cultural resources;
- Visual resources;
- Recreation; and
- Wastes, hazardous or solid.

## 3.2 WATER QUALITY

The Easy Junior Mine is located on a structurally disturbed zone along the east side of the Pancake Range within Hydrographic Basin 10, Sub-Area 173B, Railroad Valley – Northern Part. This basin is undesignated for water use. The nearest surface drainage is approximately eight miles south of the site at Bull Creek. Surface water flows in small drainages only in response to meteoric events. Groundwater in the Project Area occurs at elevations ranging between 5,000 and 5,380 feet amsl. Groundwater in the vicinity of the spent heap, ponds, and waste rock pile occurs about 1,000 to 1,500 feet bgs. The Chainman Shale, Joana Limestone, and Pilot Shale separate the surface from the groundwater. The groundwater appears to be in the Devil's Gate Limestone (Alta Gold Co., 1996).

### 3.2.1 Proposed Action

Impacts from the Proposed Action to surface water quality would be minimized by the use of best management practices. The spent heap would be regraded to reduce the potential for erosion and resultant sloughing of heap material off of the liner containment. Stormwater would be routed away from the reclaimed facilities where practical. No indirect or residual impacts are expected occur.

Table 3-3 presents a comparison of the draindown fluid chemistry with existing Nevada standards (Nevada Administrative Code 445A.144) for drinking water sources, irrigation, livestock watering, and wildlife propagation. Although the chemistry may not meet an individual standard, all constituents meet one or more of the standards. Total dissolved solids and nitrates are expected to decrease over time.

**Table 3-3: Comparison of Draindown Fluid Chemistry with Nevada Water Standards**

| Constituent | Drinking Water | Irrigation | Livestock Watering | Wildlife Propagation | Draindown Fluid |
|---|---|---|---|---|---|
| Aluminum | 0.05-0.2 | - | - | - | 0.3 |
| Antimony | 0.006 | - | - | - | 0.007 |
| Arsenic | 0.05 | 0.1 | 0.2 | - | 0.15 |
| WAD Cyanide | 0.2 | - | - | - | 0.098 |
| Mercury | 0.002 | - | 0.01 | - | 0.0059 |
| Nitrate/Nitrite | 10 | - | 100[1] | 100[1,2] | 230 |
| Selenium | 0.05 | 0.02 | 0.05 | - | 0.12 |
| Sulfate | 250-500 | - | - | - | 1,500 |
| Thallium | 0.002 | - | - | - | 0.011 |
| Total Dissolved Solids | 500-1,000 | - | 3,000 | - | 3,800 |

Values reported in mg/L
[1] Nitrate as N
[2] 10 as $NO_2$

Impacts to groundwater would be decreased by reducing the infiltration of meteoric water through the heap from the present one or more gpm to approximately 0.24 gpm, which is approximately a 75 percent reduction. Draindown fluid would continue to report to the existing infiltration field, which has an estimated area of influence of one acre. The constituents of concern for groundwater, surface soils, and vegetation would be TDS, nitrates, sulfates, selenium and arsenic. Selenium is slightly above the irrigation standards, and discharge through an infiltration field is most similar to an underground irrigation system. Under the Proposed Action, no surface waters in the area would be affected by selenium, and wildlife would not have the opportunity to drink the water. Selenium and arsenic could concentrate in plant tissues as discussed in Section 3.5. Sulfates and TDS could eventually affect the infiltration field by concentrating in the soils below the infiltration field pipes. High TDS generally means that there are salts in fluid that could precipitate out and eventually form a sort of caliche layer that would limit plant rooting depth over an unknown period of time, perhaps decades. This layer could create an environment not conducive to plant growth. Sulfates, if oxidized, could lead to low pH, but the reducing condition of the subsurface environment might prevent this occurrence. Nitrates are more of a concern to groundwater; however, the Proposed Action would reduce the volume of draindown fluid and associated mass of nitrates reporting to the infiltration field.

The Hydrologic Evaluation of Landfill Performance (HELP) Model version 3.0 was used to evaluate soils for closure of the spent heap. Three soils, one on-site stockpile and two borrow areas, were evaluated for

use as a cover. The HELP Model estimates the amount of precipitation that each soil types allows to infiltrate through to the spent heap. The model projected that a 12-inch thick cover of the on-site stockpile or Soil Borrow #1 would provide the best performance with an approximate 98 percent efficiency in preventing precipitation from infiltrating. The average annual projected draindown would be on the order of 0.24 gpm.

The vadose zone is defined as the region between the ground surface and the underlying groundwater aquifers. It is a geologic zone through which the draindown fluid would travel prior to contacting groundwater. The vadose zone will vary in depth and composition between locations. According to the hydrogeologic information for the Project Area, groundwater in the vicinity of the spent heaps is thought to occur within the Devils Gate limestone. The geologic logs for condemnation holes drilled near the heap-leach pads indicate that the groundwater in the vicinity of the spent heaps occurs at approximately 1,000 feet below ground surface (bgs). The complexity of the lithologies underlying the Project Area precludes an accurate estimate of the probable time for draindown to reach the underlying aquifer. A relatively thin layer of gravel overlies approximately 1,000 feet of interbedded shale and limestone. Using a conservative assumption that only one layer of alluvial-like material is present rather than a complex assemblage of bedrock material, the time for the draindown fluid to reach groundwater would be on the order of 1,000 years based on the following calculation:

0.24 gpm * 1,440 min/day * 365 days/yr = 125,100 gallons per year = 16,900 cubic feet/year

1,000 feet * 43,560 square feet * 40% pore volume = 17,424,000 cubic feet of void space in the column

17,424,000 cubic feet void space/ 16,900 cubic feet/year = 1,031 years

[Note: Void space estimate based on value used in similar mine closure in Long Valley, Nevada (SRK, 2001)]

Because the groundwater level in the Project Area exceeds 1,000 feet bgs, the likelihood of infiltration of draindown through the vadose zone including the limestone and shale formations into the underlying aquifer is negligible. In addition, the geologic strata in Nevada usually exhibit some level of attenuating capacity for metals such as arsenic.

### 3.2.2 No Action Alternative

Impacts from the No Action Alternative would continue to discharge about one to two gallons per minute on a seasonal basis to the subsurface. The opportunity to decrease this discharge and come closer to a zero discharge facility would be lost. Environmental and groundwater risks would not be reduced.

### 3.2.3 Alternative Action

The Alternative Action includes the construction of one or two evaporation basins; the original infiltration field would not be utilized. Instead the water would be routed to the evaporation basin(s) where the discharge would evaporate. Overflow from these systems would be routed to a new infiltration field.

The evaporation design would reduce or eliminate the amount of draindown water discharged to the vadose zone. The evaporation basin(s) would allow for additional evaporation of water. The quality of

water discharged could be improved with this alternative. There is potential for some attenuation and drop out (precipitation) of constituents of concern before the overflow discharges to the subsurface. The potential to impact groundwater would be even less with this alternative as compared to the Proposed Action. Under this alternative the acid drainage on the waste rock pile characterized by fumaroles (actual burning and smoking soils due to sulfate reactions) and very low pH areas may not be addressed.

## 3.3 AIR QUALITY

The Project Area is located within Air Quality Basin number 10, Sub-Area 173B. This basin is designated as an attainment area, an area considered to have air quality as good as or better than the National Ambient Air Quality Standards, by the NDEP - Bureau of Air Pollution Control. Precipitation is approximately 12 inches per year. The annual lake evaporation is approximately 48 inches per year (Alta Gold Co., 1996).

### 3.3.1 Proposed Action

Impacts from the Proposed Action to air quality would be minimized by the use of speed limits. Impacts would be short-term and transitory. No indirect or residual impacts are expected occur. Dust would be controlled during construction activities such as recontouring and hauling material using water trucks as needed. Water would be obtained from the existing well.

### 3.3.2 No Action Alternative

Impacts from the No Action Alternative would include long-term fugitive dust emissions from unreclaimed areas.

### 3.3.3 Alternative Action

Impacts from the advanced evaporation basin design would be the same as the projected impacts from the Proposed Action.

## 3.4 SOILS

Growth media was salvaged and stockpiled in various locations during initial mine development. The spent ore was analyzed for total metal content and compared to growth media analyses and thresholds for environmental risk. Spent ore analysis indicated the arsenic content was slightly above standards for on-site workers and some species of wildlife (CDM, December 2003). However, growth media samples also exceeded the threshold for arsenic. All other constituents of concern for wildlife and human exposure were at or below thresholds of concern.

### 3.4.1 Proposed Action

Growth media would be placed over the recontoured surfaces of the spent heap at a depth of 12 inches. Growth media with the preferred water holding capacity would be placed on the heap. Other reclaimed

surfaces such as the waste piles would have growth media placed if sources and funding permit. If needed, soil material would be excavated from the Fresh Water Pond borrow area or other areas during closure activities. This material would be used in construction of the heap leach pad cover and in backfilling the process ponds. The remaining subsoil within the borrow area footprint would be lacking in organic matter and may result in less productive soils.

About 71 acres of previously disturbed surface would be covered with growth media, allowing vegetation to become re-established and reduce erosion. Covering the spent ore on the heaps would eliminate any potential risk of exposure to wildlife and humans in the area. Upward migration of metals and salts is not anticipated to be a concern due to the difference in the physical characteristics in the growth media and the underlying spent ore.

The process ponds would be backfilled, covered with growth media, and seeded. No indirect or residual impacts are expected occur. If funding permits, acid soils on the waste rock pile would be improved with locally available limestone and possibly supplemental lime amendments.

The infiltration field could potentially concentrate salts, sulfates, arsenic, and selenium below the surface. Direct exposure to the infiltration field by humans or wildlife would be eliminated by the existing growth media cover. Erosional losses prior to the re-establishment of a vegetative cover are expected to be minimal given that the slope would be regraded and designed to lessen erosion. Water storage and evapotranspiration within the growth media layer would result in less percolation of meteoric water through the spent heap and less draindown fluid reporting to the infiltration field.

The quantity of metals, nitrates, and TDS discharging into the soils below the infiltration field would be reduced in this alternative as compared to the No Action Alternative.

### 3.4.2 No Action Alternative

Impacts from the No Action Alternative would remain the same as the present. Revegetation of the spent heap would be unlikely due to the unfavorable physical and chemical soil properties on the heap. The side slopes would remain at their present configuration of 2.3H:1V. Erosion of the side slopes of the spent heap may be accelerated in areas where more fines occur, leading to head cutting and the creation of gullies. The spent ore could possibly slough off the sides and off of containment. The spent ore could remain as a potential environmental risk to humans and animals due to elevated levels of arsenic, although the risk is only slightly above threshold levels. Meteoric water would continue to infiltrate through the spent heap and discharge to the existing infiltration field.

### 3.4.3 Alternative Action

The spent heap would be covered as described in the Proposed Action. At least one pond would be used as an evaporation basin and backfilled with soil material. This pond would not be covered with growth media. Because draindown fluid would report to the evaporation basin(s), there could be a gradual trend towards concentration of sulfates, salts, nitrates, selenium, and arsenic in the evaporative layer of the basin. The existing infiltration field would no longer be used and would no longer have the potential to concentrate these constituents. Potential overflow would report to a new infiltration field. Initially, there

is expected to be much less potential for accumulation of salts, sulfates, arsenic, and selenium within this new infiltration field because most constituents are expected to attenuate in the evaporation basin(s). Over time, the evaporation basin(s) could become less functional due to salt build-up and the formation of a caliche layer, which could reduce evaporation. There would be sufficient depth of cover soil or cover gravel on the evaporation basins to prevent blowing dust from these areas of potential accumulation. With the Alternative Action there is a trade off for improved water quality going into the vadose zone and more localized concentration of salts, sulfates and metals in the surface soils; however, the design is such that plants and animals would not be exposed to these areas of concentration unless the evaporation basin(s) fail. In this event, the impacts from the Alternative Action would not be much different than the Proposed Action for soils. If available funding is used for this alternative, up to 20 acres of existing disturbance may not be reclaimed.

## 3.5 VEGETATION

The vegetative communities surrounding the Project Area are diverse, with a wide range of vegetative types. The two main vegetative types are northern desert shrub/sagebrush and pinyon-juniper woodlands. The sagebrush communities occur on the lower elevation piedmont slopes while the pinyon-juniper woodlands occur at the upper elevations. Vegetation within the Project Area includes remnants of the original vegetation communities, colonizing species and reclaimed species on the waste rock pile. The spent heap has very little colonized vegetation and is essentially barren of any vegetation.

### 3.5.1 Proposed Action

Direct impacts would be the return of vegetation to the spent heap and surrounding disturbed areas. If funding permits, open areas on the waste rock pile would be revegetated as well. The reclaimed areas would initially have a different plant composition than the existing plant communities, and the structural complexity of the reclaimed plant communities is likely to be less complex than the adjacent undisturbed vegetation. However, the additional plant species and early seral stages created by the reclamation would increase the overall regional plant diversity and community structure. For the first few growing seasons following reclamation, an increase in annual invasive species could occur. Annual invasive species such as cheatgrass could be persistent; however desired perennial species are expected to replace invasive plants over time to some extent, under normal climatic conditions. In the long-term, vegetation is expected to return to a condition similar to pre-mining conditions. Although every attempt would be made to achieve successful establishment of desired perennial vegetation, it is possible that there could be a permanent increase in annual invasive weeds such as cheatgrass.

The infiltration field is buried about three feet bgs, which is below the root depth for many of the native herbaceous species. Deep rooted species, such as sagebrush, are likely to take up the water, but are unlikely to concentrate and create toxicity to plants or animals consuming those plants. As shown in Table 3-3, only arsenic and selenium concentrations in the draindown nominally exceed Nevada's standards for irrigation water.

Arsenic is not essential for plant growth. Arsenic is taken up actively by roots, with arsenate being more easily absorbed than arsenite. The phytotoxicity is strongly affected by the form in which it occurs in soils. Arsenite is more toxic than arsenate, and both are considerably more toxic than organic forms. In experiments with toxic levels of arsenic, rice and legumes appear to be more sensitive than other plants. Because arsenic is chemically similar to phosphorus, it is translocated in the plant in a similar manner and is able to replace phosphorus in many cell reactions. Except where soil arsenic content is high (around smelters and where arsenic-based pesticides have been used heavily), arsenic generally does not accumulate in plants to toxic levels. Arsenic in soil is usually non-toxic to plants at 5 mg/kg or less, becomes toxic to sensitive seedlings at about 20 mg/kg, and is lethal to replants of perennial material at about 80 mg/kg, although established, well-rooted crops may continue to survive and not show any damage (SRK, 2001).

Most toxicity data for terrestrial vegetation are developed through studies of crop species (i.e., corn, rice, barley, and alfalfa), which are considerably more sensitive to contaminants that are most native vegetation, especially in harsh environments that exist throughout most of Nevada. Data collected from the Getchell Gold Mine in northern Nevada, which has both elevated naturally occurring and anthropogenic arsenic concentrations, suggests that the potential incremental increase in soil arsenic concentration anticipated for the soils in the land application area, possible ET basins, and beneath a subsurface infiltration system, will be negligible when compared with natural soil concentrations (SRK, 2001).

Selenium is not proven to be essential for plant growth. It is absorbed by plants as selenite, selenate or in organic form and the selenate may be the more toxic. It is believed that selenate is taken up actively while selenite uptake is largely passive. Selenium is translocated to all parts of the plant, including the seed, in low molecular weight compounds. The total concentration of selenium in soils does not directly determine the concentration of selenium in the plants growing on those soils. The chemical bonding and reaction patterns are the critical determining factors since different chemical forms vary in their solubility and subsequent availability to plants. The chemical forms of selenium present in soils and sediments are closely related to the oxidation-reduction potential and pH of the soil. Soil conditions need to be adequate in terms of pH balance and moisture in order to produce plants adequate to meet the nutritional requirements of the animals and humans who consume the vegetation without the increased levels that could lead to chronic overdose (SRK, 2001).

Direct impacts to vegetation would be limited to those species with a root system sufficiently deep to access the draindown fluid from the infiltration field. The infiltration field would be about 100 feet in length and 80 feet in width and cover about 0.2 acres. As such, only a very limited number of individual plants would potentially access the draindown in the infiltration field. Impacts are projected to be negligible. Terrestrial species using these plants as a food source would not be limited to the 0.2-acre area and would be able to use other sources for feed. No indirect or residual impacts are projected.

### 3.5.2 No Action Alternative

Impacts from the No Action Alternative would remain the same as the present. Revegetation of the spent heap would be unlikely in the near term. More water would be going to the infiltration field increasing the possibility of environmental concerns and effects on vegetation.

### 3.5.3 Alternative Action

For the Alternative Action, the evaporation basin(s) would not be revegetated. If constituents of concern concentrated within the evaporation basin, the design would be such that the deep level of gravel and lack of fines would prevent establishment of vegetation. The original infiltration field would be eliminated, which would in turn eliminate the concern of vegetation taking up the constituents of concern and potential toxicity to grazing animals. The new infiltration field would have greatly reduced or possibly zero inflow and potentially cleaner water, thus being a much lesser potential impact to plants growing on the field. As discussed under the soils section, there is the possibility that, over time, the evaporation basin(s) could become non-functional due to accumulation of salts. In that case the impacts to the vegetation growing on the infiltration field would be similar to the Proposed Action.

## 3.6 NOXIOUS WEEDS AND INVASIVE, NON-NATIVE SPECIES

Noxious weeds are legally designated species of plants, which are detrimental or destructive and difficult to control or eradicate. Invasive, non-native species are plants that are not indigenous to Nevada that tend to displace or increase in cover relative to surrounding native vegetation; these species have become established and spot eradication is not effective.

The area in the vicinity of the Easy Junior Mine was surveyed for weeds, but the inventory crew did not survey within the mine perimeter fence. Two large infestations of whitetop were noted in Township 15 North, Range 56 East, Section 9. Several patches of Russian knapweed, about 3,000 square feet each, occur along the access road within one mile of the mine. Both infestations are a potential source of seeds. Cheatgrass and halogeton were observed at the site. The *Risk Assessment for Noxious and Invasive Weeds* (Appendix A) indicated a moderate level of risk that noxious and invasive weeds would spread to the Project Area and a moderate level of risk of adverse and cumulative effects on native plant communities.

### 3.6.1 Proposed Action

The proposed access route into the Project Area is adjacent to stands of Russian knapweed; another nearby source of whitetop is in the vicinity of the mine. Due to increased ground disturbance as a result of closure activities, the likelihood of invasive weed encroachment would increase. Direct impacts would be the invasion and colonization of noxious weeds and invasive, non-native species on the spent heap and surrounding disturbed areas.

The use of certified weed-free seed for reclamation and continuation of noxious weed control efforts (i.e., vehicle washing, and weed control using herbicides) should reduce the risk that noxious weeds would become introduced or established on the reclamation site. Due to increased ground disturbance as a result

of closure activities, the likelihood of invasive weed encroachment would increase. BLM would follow best management practices in order to prevent the spread of invasive species in the Project Area. Additionally, BLM would use a native plant species in the reclamation seed mix to reduce invasive species over time by maintaining the current plant communities. Short-term annual exotics may be used to help prevent the initial establishment of undesired annual such as cheat grass. Annual invasive species such as cheatgrass could be persistent; however desired perennial species are expected to replace invasive plants over time to some extent, under normal climatic conditions. In the long-term, vegetation is expected to return to a condition similar to pre-mining conditions. Although every attempt would be made to achieve successful establishment of desired perennial vegetation, it is possible that there could be a permanent increase is annual invasive weeds such as cheatgrass.

Water going to the infiltration field would be particularly high in nitrates. This nitrate acts as a fertilizer to the soils; however, most native plants in Nevada are adapted to very low nitrogen soils. Nitrogen has been observed to increase the establishment of weedy annuals. Non-native weedy annuals heavily invade most infiltration fields, including the Easy Junior Mine infiltration field.

### 3.6.2 No Action Alternative

Impacts from the No Action Alternative would result in a gradual increase in undesirable weeds. Productive plant species to support livestock and wildlife would not be introduced to the disturbed areas. Undesirable non-native annuals such as cheatgrass and salt tolerant species such as halogeton are likely to colonize areas so native vegetation cannot become established. A higher flow rate off the leach pad would increase the chance for undesirable weeds on the infiltration field.

### 3.6.3 Alternative Action

Impacts from the evaporation basin design would be the similar to the impacts from the Proposed Action. The existing infiltration field would be eliminated, and without a continual source of high nitrogen, this area may tend to return to more native vegetation. The reduced quantity and better quality water going to the new infiltration field would enhance the success of native vegetation growing on this new site. If the evaporation basin(s) eventually fail, impacts to weeds would be the same as for the Proposed Action. The new infiltration field could be as likely to establish weeds as the existing system. This alternative would also be more expensive, and the end result may be that fewer of the other components of the mine would be successfully covered with growth media and revegetated, therefore increasing the chance of gradual invasion by weeds, especially in areas where native vegetation has not re-established.

## 3.7 WILDLIFE (INCLUDING MIGRATORY BIRDS)

Wildlife diversity in the vicinity of the Project Area is typical of that found in the sagebrush/shrub and pinyon/juniper woodland communities and includes species common to the Nevada Great Basin: coyotes, mule deer, pronghorn antelope, jack rabbits, cottontails, ground squirrels, sage grouse, golden eagle, mourning doves, and chukar. The absence of surface water is a limiting factor for wildlife distribution. The Project Area is located within mule deer winter range. No nesting or foraging areas for waterfowl or

shorebirds occur within the Project Area. There are no aquatic resources in the Project Area; no riparian areas are located within the Project boundaries.

### 3.7.1 Proposed Action

Direct impacts would be the reclamation of up to 71 acres of vegetation for wildlife habitat and forage. Ponds would be backfilled thereby removing an attractive nuisance and dangerous trap to wildlife. No indirect or residual impacts are projected. Ecotoxicity risks from plants growing on the infiltration field would be less than the No Action Alternative because of the reduced flow from the pad.

### 3.7.2 No Action Alternative

Impacts from the No Action Alternative would remain the same as the present. About 71 acres would not be available for productive wildlife habitat. Native plant species would not be introduced to restore wildlife habitat to the disturbed areas. Meteoric water collects in the lined ponds and presents a physical hazard to some wildlife. There would be continued potential for ecotoxicity to wildlife breathing the dust from the leach pad and consuming plants that grow in or near the infiltration field.

### 3.7.3 Alternative Action

Impacts from the evaporation basin design would be the same as the impacts from the Proposed Action. Plants relying directly on water discharged from the infiltration field would be eliminated and would provide the most reduction in potential ecotoxicity. Only if the evaporation basin(s) became non-functional in the future due to salt accumulation would there be potential for plant growth on the new infiltration field that would have similar risk factors as the No Action Alternative. Up to 20 acres would not be revegetated for wildlife habitat and forage.

## 3.8 LIVESTOCK GRAZING

The Project Area is located within the Duckwater Allotment, which is categorized as “I” or improve. The potential to increase forage production is high while the current forage production is low. The current forage value is fair to poor.

### 3.8.1 Proposed Action

Direct impacts would be the reclamation of up to 71 acres of vegetation available for grazing. After the reclaimed vegetation was established, the perimeter fence could be removed, which would allow livestock access to the site. There would be concern of overgrazing the leach pad and losing the vegetative cover. Livestock management may be needed. If necessary, the perimeter fence may remain. Livestock could have access to plants growing on the infiltration field with the potential for elevated levels of metals, but this concern is minimal. Weedy annuals are currently in place and may persist. See Section 3.5 for further discussion.

### 3.8.2 No Action Alternative

Impacts from the No Action Alternative would remain the same as the present. Livestock would continue to be excluded from the site until the fence broke down or was removed. At that time livestock could access plants growing on the infiltration field, which would have a higher possibility of impact than the Proposed Action, even though this is still minimal.

### 3.8.3 Alternative Action

Impacts from the evaporation basin design would be similar to the impacts from the Proposed Action. There would be reduced potential of ecotoxicity from cattle grazing vegetation that grows on the existing infiltration field. Only if the evaporation basin(s) became non-functional in the future due to salt accumulation would there be potential for plant growth on the new infiltration field that would have similar risk factors as the No Action Alternative. Up to 20 acres of disturbance may not be revegetated.

## 3.9 WILD HORSES

The Wild Free-Roaming Horse and Burro Act (Act), of 1971, as amended, (Public Law 92-195) directs the federal government to manage wild horses and burros as an integral part of the natural system of the public lands under the principle of multiple use. The Project Area is located entirely within the boundary of the Monte Cristo Herd Management Area (HMA). The Monte Cristo HMA is located 30 miles west of Ely in White Pine and Nye counties and encompasses 228,940 acres. In May 2001, 836 wild horses were surveyed in the Monte Cristo HMA, exceeding the Appropriate Management Level of 236 established for the area. In December 2002, 586 horses were gathered to reduce the number of horses in the area, so they would not die of starvation or thirst. The current population estimated for the Monte Cristo HMA is 623 wild horses.

### 3.9.1 Proposed Action

Direct impacts would be the reclamation of up to 71 acres of vegetation available for grazing. After the reclaimed vegetation is established, the perimeter fence would be removed, which would allow wild horse access to the site. If overgrazing of the leach pad is likely, perimeter fence may remain. Wild horses would have access to plants growing on the infiltration field, which could have some elevated levels of metals, but this concern is minimal. Weedy annuals are currently in place and may persist. See discussion under Section 3.5.

### 3.9.2 No Action Alternative

Impacts from the No Action Alternative would remain the same as the present. Wild horses would continue to be excluded from the site until the fence broke down or was removed. At that time wild horses could access plants growing on the infiltration field, which would have a higher possibility of impact than the Proposed Action, even though this is still minimal.

### 3.9.3 Alternative Action

Impacts from the evaporation basin design would be the same as the impacts from the Proposed Action. There would be reduced potential of ecotoxicity from horses grazing vegetation that grows on the existing infiltration field because this system would no longer be in use. Only if the evaporation basin(s) became non-functional in the future due to salt accumulation would there be potential for plant growth on the new infiltration field that would have similar risk factors as the No Action Alternative. Up to 20 acres of disturbance may not be revegetated.

## 3.10 CULTURAL RESOURCES

### 3.10.1 Proposed Action

No direct, indirect, or residual impacts are projected to occur from the proposed activities. Areas of new disturbance within the existing borrow area would be surveyed for cultural resources prior to any further surface disturbance. Any sites located during the survey that are potentially eligible for the National Register of Historic Places, would be avoided or treated.

### 3.10.2 No Action Alternative

No impacts are projected for the No Action Alternative.

### 3.10.3 Alternative Action

Impacts from the evaporation basin design would be the same as the impacts from the Proposed Action.

## 3.11 VISUAL RESOURCES

The Project Area is located in the northern Great Basin section of the Basin and Range Physiographic Province. The Great Basin is characterized by a rhythmic pattern of isolated mountain ranges and broad sweeping basins. Clear skies and broad open vistas characterize this landscape. The Project Area includes rolling to angular hills and ridges with steep side slopes. The area is covered with a homogeneous pattern of sagebrush-grasses at lower elevations and pinyon-juniper and mixed shrubs at higher elevations. Vegetation colors include tawny gray, brown, dark green, gray-green, and green. The spent heap and surrounding disturbance, contrast with the background landscape. From the access road, the spent heap can be seen as an angular structure that contrasts with the surrounding texture, color, and topography.

The Project is located in a Class IV area for Visual Resource Management (VRM). Class IV allows for activities that involve major modification of the existing character of the landscape. The level of contrast can be high, dominating the landscape and the 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 the characteristic landscape.

### 3.11.1 Proposed Action

The proposed activities would tend to reduce the contrast between the spent heap and the background and tend to restore the color and texture closer to that of the surrounding undisturbed terrain. Although the ponds cannot be seen from the road, they would be blended in with the surrounding topography. The Proposed Action would be in accordance with Class IV management activities.

### 3.11.2 No Action Alternative

Impacts from the No Action Alternative would remain the same as the present. There would be more obvious and permanent evidence of large-scale mining.

### 3.11.3 Alternative Action

Impacts from the evaporation basin design would be the same as the impacts from the Proposed Action.

## 3.12 RECREATION

The proposed Project Area is generally isolated and undeveloped with no facilities. Developed recreational opportunities are relatively sparse in this part of Nevada; users are assumed to travel to remote areas of the general region, particularly on weekends to recreate. Activities would primarily include off-highway vehicle use, dirt bike riding, hunting, and camping. Other recreational activities would include mountain biking, horseback riding, sightseeing, outdoor photography, nature study, wildlife viewing, bird watching, and rock collecting. Under the Egan RMP the proposed Project Area is located in an area “open” to off-road vehicle use.

The mine perimeter is fenced off and the general public is discouraged from entering the mine site.

### 3.12.1 Proposed Action

Reclamation activities may have a short-term direct impact on recreational use or users. Noise from the heavy equipment may reduce the quality of the recreational activity. No long-term adverse indirect or residual impacts to recreation are anticipated. Once the perimeter fence is removed, additional lands would be available for recreation. There would be additional hazards to the public with open access to an open pit mine.

### 3.12.2 No Action Alternative

Impacts from the No Action Alternative would remain the same as the present. The area would remain fenced off from recreationists. Should the fence deteriorate, recreationists could be exposed to physical and ecotoxicological hazards.

### 3.12.3 Alternative Action

Impacts from the evaporation basin design would be the same as the impacts from the Proposed Action.

## 3.13 WASTES, HAZARDOUS OR SOLID

Past land uses within the project area have included mining and minerals exploration. Past activity has possibly led to undocumented hydrocarbon spills. Mining related chemicals have been previously removed from the mine site and disposed. The *Final Investigation Report* (CDM 2003) identified debris such as fluorescent lights, intact equipment batteries, tires, and paint as present on the site; these materials would be disposed in accordance with state and federal regulations during reclamation activities. Construction debris would be buried in accordance with permit # SWMI 17-46. At the end of activities, this permit would be closed out. Solid waste generated by mining activities was buried in the waste rock pile in accordance with this permit. The current permit would allow solid waste and debris to be buried in the process ponds.

### 3.13.1 Proposed Action

Regulated waste as defined by the Resource Conservation and Recovery Act would not be generated by this project. Hazardous materials as classified by Nevada statutes would not be stored within the proposed project area. Potentially hazardous materials would be removed from the site. No direct, indirect, or residual impacts are projected from hazardous or solid wastes. BLM would comply with pertinent transportation and handling regulations and practices. Spills of regulated products would be contained, cleaned up, and reported in accordance with NDEP regulations. The proposed Class III landfill would be closed in accordance with NDEP regulations. Soils exceeding the standard for total petroleum hydrocarbons (TPH) would be removed.

### 3.13.2 No Action Alternative

Impacts from the No Action Alternative would remain the same as the present. Potentially hazardous materials would remain at the site. Soils exceeding the standard for TPH would not be removed.

### 3.13.3 Alternative Action

Impacts from the evaporation basin design would be the same as the impacts from the Proposed Action.

## 3.14 COMPARISON OF ALTERNATIVES

Table 3-4 provides a summary comparison of the potential impacts associated with the No Action Alternative, Proposed Action, and Alternative Action.

**Table 3-4: Comparison of Impacts for the No Action Alternative, Proposed Action, and Alternative Action**

| Element/ Resource | No Action Alternative | Proposed Action | Alternative Action |
|---|---|---|---|
| Water Quality | • Draindown fluid would flow about one gpm to existing infiltration field. | • Draindown fluid would flow about 0.24 gpm to existing infiltration field. | • Draindown fluid would flow to evaporation basin; outflow would report to a new infiltration field.<br>• Short-term reduction in water quantity. Long-term reduction unknown; would be similar to the Proposed Action or the No Action Alternative. |
| Air Quality | • Long-term fugitive dust emissions from un-reclaimed surfaces. | • Short-term fugitive dust emissions during reclamation activities. | • Short-term fugitive dust emissions during reclamation activities. |
| Soils | • Revegetation of spent heap unlikely due to unfavorable physical and chemical characteristics of spent ore.<br>• Infiltration field could concentrate salts, sulfates and metals.<br>• Potential for accelerated erosion. | • Spent heap would be covered to limit exposure.<br>• Infiltration field could concentrate salts, sulfates and metals, but less than the No Action Alternative.<br>• Potential for erosion would be reduced. | • Spent heap would be covered to limit exposure.<br>• New infiltration field would not concentrate salts, metals, and sulfates initially, but could concentrate salts over the very long-term.<br>• Potential for erosion would be reduced. |
| Vegetation | • About 71 acres of existing disturbance would not be reclaimed. | • Up to 71 acres of existing disturbance would be reclaimed. | • Up to 51 acres of existing disturbance would be reclaimed. |
| Noxious Weeds and Invasive, Non-Native Species | • Productive plant species would not be reintroduced.<br>• Undesirable species likely to colonize in place of native vegetation.<br>• Nitrates in draindown fluid have potential to increase the establishment of weedy annuals in the existing infiltration field. | • BMPs would reduce impacts.<br>• Likelihood of invasive weed encroachment would decrease.<br>• Nitrates in draindown fluid have potential to increase the establishment of weedy annuals in the infiltration field, however; a decrease in draindown would reduce this potential in comparison with the No Action Alternative. | • BMPs would reduce impacts.<br>• Likelihood of invasive weed encroachment would decrease.<br>• Better water quality may enhance the re-establishment of native vegetation in the new infiltration field. Original infiltration field could re-establish natives. |

| Element/ Resource | No Action Alternative | Proposed Action | Alternative Action |
|---|---|---|---|
| Wildlife Livestock Grazing, and Wild Horses | • About 71 acres would not be reclaimed.<br>• Ponds would not be backfilled.<br>• Higher draindown from pad would increase potential for ecotoxicity from the existing infiltration field<br>• Continued potential for ecotoxicity from spent ore | • Up to 71 acres of existing disturbance would be reclaimed for wildlife habitat and forage.<br>• Ponds would be backfilled and revegetated.<br>• Less draindown from pad would decrease the potential for ecotoxicity of the infiltration field.<br>• Spent ore would be covered and eliminate ecotoxicity potential. | • Up to 51 acres of existing disturbance would be reclaimed for wildlife habitat and forage.<br>• Ponds would be backfilled but not revegetated<br>• Evaporation basin would eliminate potential for ecotoxicity for existing infiltration field.<br>• Spent ore would be covered and eliminate ecotoxicity potential. |
| Cultural Resources | • No impacts. | • Areas of new disturbance would be inventoried; sites would be avoided. | • Areas of new disturbance would be inventoried; sites would be avoided. |
| Visual Resources | • Obvious and permanent evidence of large-scale mining would remain. | • Spent heaps would be recontoured to blend in with existing topography. | • Spent heaps would be recontoured to blend in with existing topography. |
| Recreation | • The mine area would continue to exclude recreationists.<br>• Recreationists could be exposed to physical and ecotoxicological hazards. | • Additional lands would be available for recreation.<br>• Recreationists could be exposed to hazards associated with open access to an open pit mine. | • Additional lands would be available for recreation.<br>• Recreationists could be exposed to hazards associated with open access to an open pit mine. |
| Wastes, Hazardous or Solid | • Soils exceeding the standard for TPH would not be removed. | • Soils exceeding the standard for TPH would be removed. | • Soils exceeding the standard for TPH would be removed. |

# 4 CUMULATIVE IMPACT ASSESSMENT

According to the BLM handbook *Guidelines for Accessing and Documenting Cumulative Impacts* (1994), the analysis can be focused on those issues and resource values identified during scoping that are of major importance. This environmental assessment was written to address the closure components not analyzed in the original EA. The closure components for analysis involved recontouring, covering, and revegetation of the spent heap to minimize draindown, and the use of the existing system (infiltration field) and potential systems (evaporation basin(s) and infiltration field) for disposal of the draindown. The potential effect of draindown on groundwater, soils, and vegetation were the driving force for this EA; therefore, the issue and resource value of major importance or public concern, which would be analyzed for cumulative impacts include water quality, soils and vegetation.

Cumulative impacts result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts could result from individually minor, but collectively significant actions, taking place over a period of time (Council on Environmental Quality, Regulations for Implementation of NEPA, 1508.7).

## 4.1 WATER QUALITY

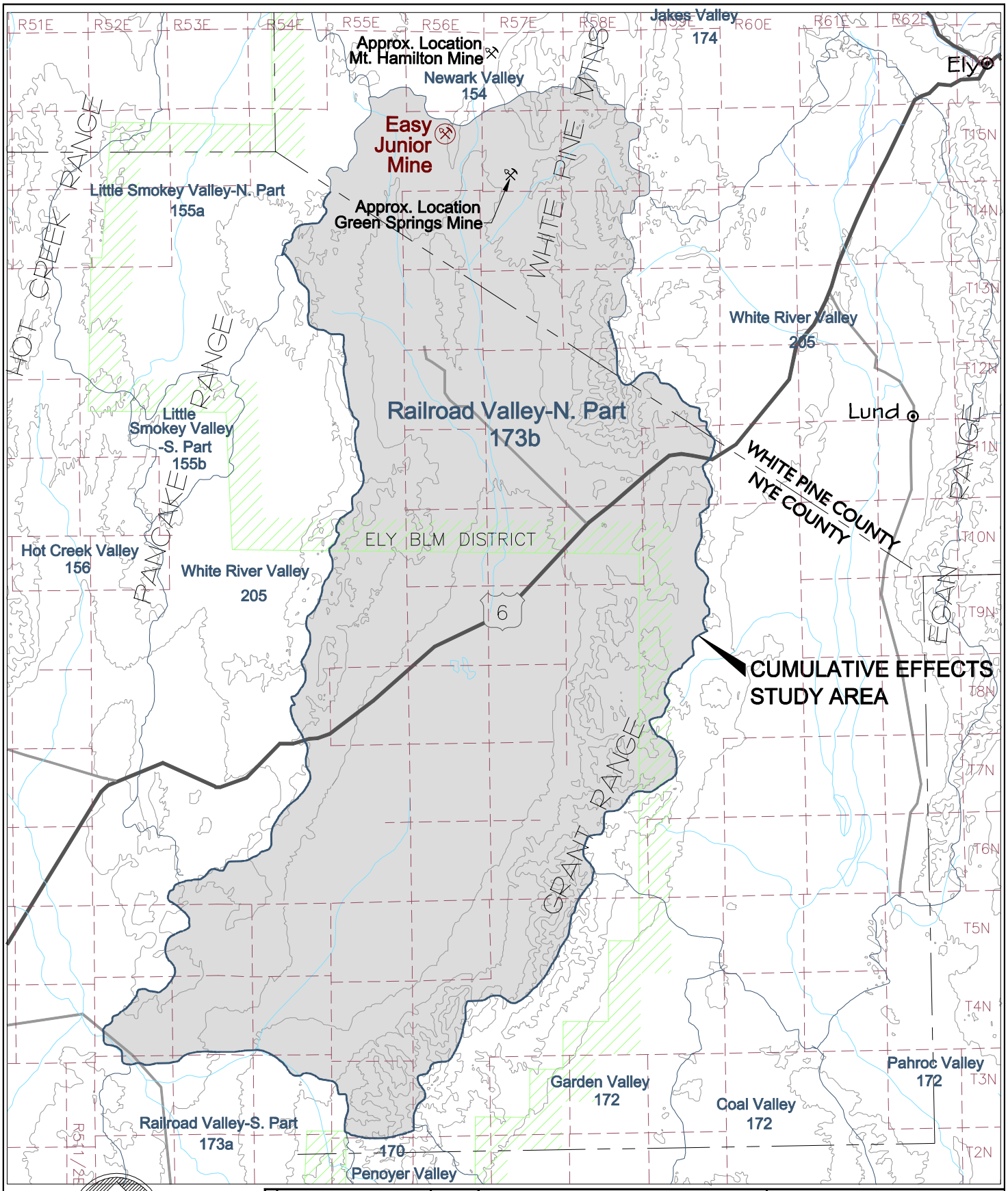
***Area of Impact***

The cumulative effects study area for water quality is the Hydrologic Basin # 10, Sub-Area 173B, Railroad Valley North in which the Easy Junior Mine is located. See Figure 6.

***Assumptions for Analysis***

Assumptions used for this analysis include the following:

- The depth to groundwater is at least 1,000 feet bgs at Easy Junior Mine;
- Most, if not all, constituents of concern would be attenuated in the soils before reaching groundwater;
- It would take over 1,000 years before discharge reached groundwater based on an estimate of 1,000 feet to groundwater; and
- The climate would not change dramatically in the next several hundred years and that ground water and surface water patterns would not change. For example, groundwater would not rise and there would be no surface streams or lakes occurring in the Easy Junior Project Area.

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| REFERENCE | DESIGNED | AP | 5/04 |
| | DRAWN | dftg | 5/04 |
| | CHECKED | | |
| | APPROVED | | |

| REVISIONS | No. | DESCRIPTION | DATE |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

FIGURE 6

BUREAU OF LAND MANAGEMENT

EASY JUNIOR MINE
CUMULATIVE EFFECTS STUDY AREA

| SCALE: NOT TO SCALE | REVISION |
|---|---|
| JOB NO. 148803 | A |
| DWG NAME 148803-104 | |

***Past Actions***

Past land uses in the project area that may have an effect on surface and groundwater include one other heap leach gold mine that is close by and is in the same hydrologic basin and sub-area. The Green Springs Mine is located about four miles to the southeast of the Project Area. The Green Springs Mine is fully reclaimed; only monitoring activities are presently ongoing. Draindown fluid to the infiltration field is less than one gpm (K. Sullivan, Personal Communications).

***Present Actions***

The draindown fluid discharging from the two mines is the only present action contributing to ground or surface water concerns.

***Reasonably Foreseeable Actions***

Reasonably foreseeable actions could include new open pit mines within the hydrologic basin and sub-area. Interested parties would continue mineral exploration within this area. If drilling results indicate the presence of economic gold reserves, an exploration project could become a new mine with another infiltration field and potential discharge. Further, additional reserves could be found and mined at both the Easy Junior and Green Springs mines. If new reserves were found within or near the existing pits, a new leach pad would most likely be constructed rather than a reuse of the existing facilities. The existing heap may be reprocessed and incorporated into a new leach pad.

***Cumulative Impacts***

The proposed Action would reduce the volume of precipitation infiltrating through the spent heap, thereby reducing the draindown fluid discharging to the infiltration field to about an average annual flow of about 0.24 gpm from about one gpm or more. Complete infiltration of water on a long-term basis to 1,000 feet bgs is unlikely. The draindown fluid introduced to the vadose zone would likely not vary substantially in chemistry from the existing conditions; however, the flow rate would be less. Discharge from the Easy Junior spent heap is not expected to co-mingle with draindown fluid from the Green Springs spent heaps due to the distance between the two sites. The production well is located about 4.5 miles southeast of the site. The next nearest well is located about seven miles east of the site. If new mining occurs within the same basin, more information and technology would likely be available such that new mines could become zero discharge facilities. Because of the depth to ground water at all three mine sites, the soil attenuation capacity, and the improved technology and information available to minimize or eliminate discharge from any new mine sites, cumulative effects are expected to be negligible.

***No Action Impacts***

The volume of draindown fluid discharging from the spent heap in the No Action Alternative would be greater than the Proposed Action and Alternative Action. There would be more water discharged towards groundwater under the No Action Alternative as compared to the Proposed and Alternative Action..

***Alternative Evaporation Basin***

Because the water quantity and quality discharging into the ground is expected to be improved, any

potential cumulative effects for this alternative would be even less than for that described for the Proposed Action.

## 4.2 SOILS AND VEGETATION ECOTOXICITY

***Area of Impact***

The cumulative effects study area for soils and vegetation ecotoxicity is the Hydrologic Basin # 10, Sub-Area 173B, Railroad Valley North in which the Easy Junior Mine is located. See Figure 6.

***Assumptions for Analysis***

Assumptions that are to be used for this analysis include the following:

- The water chemistry coming off the pad is relatively stable and little change is expected in the next 50 years;
- The water quality will continue to meet Nevada irrigation standards;
- The growth media placed over the spent heaps and ponds is native material and would be similar in soil chemistry to the surrounding undisturbed soil (Undisturbed Nevada soils tend to be naturally high in some metals such as selenium and arsenic);
- Mine soils that could be high in contaminants of concern would be well covered with growth media which would eliminate potential dust inhalation hazards to wildlife and people;
- Some deep-rooted plant species (e.g., sage brush, rabbitbrush) may intercept the infiltrated draindown and have potential of bio-concentrating some contaminants of concern; and
- The small area on the infiltration field where grazing/foraging could occur would be only a very minor portion of the diet of a grazing animal.

***Past Actions***

Past land uses in the project area that may have an effect on soil and vegetation ecotoxicity include one other heap leach gold mines that is close by and in the same hydrologic basin and sub-area. The Green Springs Mine is located about four miles to the southeast of the Project Area. The Green Springs Mine is fully reclaimed; only monitoring activities are presently ongoing. Draindown fluid to the infiltration field is less than one gpm (K. Sullivan, Personal Communications). Both mines have an infiltration field where there is potential for accumulation of metals in the soils and vegetation. The Green Springs spent heaps were never covered with growth media or tested for total metal content. Even so, vegetation is establishing on the heaps. Uptake of metals by plants is unknown. The Green Springs Mine was reclaimed before many regulatory actions were required as they are today.

***Present Actions***

The draindown fluid discharging from these three mines are the only present actions contributing to deep soil or vadose zone concerns. The infiltration fields at both mine sites and the spent heaps at the Green Springs Mine may contribute cumulatively to surface soil and vegetation ecotoxicity concerns.

***Reasonably Foreseeable Actions***

Reasonably foreseeable actions could include new open pit mines within the hydrologic basin and sub-area. Existing or new reserves could become economical to mine at any of the existing pits. In this case, new leach pads and closure systems would most likely be developed rather than a reuse of existing facilities.

***Cumulative Impacts***

The Proposed Action would reduce the volume of precipitation infiltrating through the spent heap thereby reducing the draindown fluid discharging to the infiltration field to about an average annual flow of about 0.24 gpm from about one gpm or more. Discharge from the Easy Junior spent heap is not expected to co-mingle with draindown fluid from the Green Springs spent heap due to the distance between the three sites. If new mining occurs within the same basin, more information and technology would likely be available such that new mines could become zero discharge facilities. Because of the depth to ground water at all three mine sites, the soil attenuation capacity, and the improved technology and information available to minimize or eliminate discharge from any new mine sites, cumulative effects to deep soils in the vadose zone are expected to be negligible.

The infiltration field systems of present and future mines would add cumulatively to potential concentration of metals and salts in surface soils and possibly vegetation. Continual improvements and new technology are being developed to lessen and better understand the environmental impacts of closing a mine site. It is expected that as new mines are developed, better understanding, long-term data, and improved technology would greatly reduce or eliminate these potential cumulative impacts.

# 5 MONITORING

BLM would conduct the following monitoring efforts:

- ***Noxious Weeds and Invasive Non-native Species*** - The Ely Field Office Minerals Program would coordinate with the Noxious Weed Officer to conduct annual weed inventories and appropriate management.
- ***Reclamation Monitoring***- BLM would monitor reclamation success on an annual basis. If funding permits, areas showing accelerated erosion or lack of vegetation would be addressed.

# 6 CONSULTATION AND COORDINATION

The scope of this EA was developed through consultation with BLM resource specialists (meetings and subsequent conversations); consultation with other local, state, and federal agency resource personnel; review of company and agency files; field reconnaissance; and review of supporting documentation. Letters were sent to interested public during May of 2004.

## 6.1 LIST OF PREPARERS

**U.S. Bureau of Land Management - Ely Field Office**

| | |
|---|---|
| Lynn Bjorklund | Project Lead, Plan Review, Geology/Minerals |
| Bill Wilson | Geology/Minerals |
| Sue Baughman | Environmental Coordinator |
| Nathan Thomas | Cultural Resources |
| Elvis Wall | Native American Religious Concerns |
| Karen Prentice | Invasive, Non-native Species |
| Paul Podborny | Wildlife, Special Status Species, Wild Horses, Livestock Grazing |

**SRK Consulting**

| | |
|---|---|
| Valerie Sawyer | Project Manager |
| Amy Prestia | Technical Specialist |
| Aina Trodden | Draftsperson |

## 6.2 PERSONS, GROUPS, OR AGENCIES CONSULTED

***Other Reviewers***

The following persons, groups, and agencies were contacted during the preparation of this document.

**BOR**

Mike Gobla

**MWH, Inc.**

J. Pennington

**NDEP**

Kurt Kolbe

Kevin Sullivan

**NDOW**

Rory Lamp

**USACE**

Cecelia Horner

Bruce Jordan

## 6.3 PUBLIC NOTICE AND AVAILABILITY

This environmental assessment was made available during the public review period at the following web sites:

www.nv.blm.gov/ely/nepa/ea_list.htm and www.nwo.usace.army.mil/html/rams/rams.html

The public comment period ran from May 28, 2004 through June 25, 2004. During this time two comment letters were received. The Nevada Division of Water Resources stated that all activities had to comply with the provisions of chapters 533 and 534 of the Nevada Revised Statues. The Nevada Department of Wildlife expressed their support for the conclusions presented in the EA.

## 6.4 NATIVE AMERICAN CONSULTATION

During the review process, BLM will continue to conduct Native American consultation. To date, no comments or concerns regarding the Proposed Action have been brought forth.

# 7 REFERENCES

Alta Gold Company. 1996. *Final Permanent Closure Plan for the Easy Junior Mine Water Pollution Control Permit NEV89501*. February 22, 1996.

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# Appendix A

## Risk Assessment for Noxious and Invasive Weeds

# Risk Assessment For Noxious and Invasive Weeds
# Easy Junior Mine Closure Project

A Noxious Weed Risk Assessment was completed for the Bureau of Land Management (BLM) for a spent heap restoration project located approximately 45 miles west of Ely, Nevada and 15 miles south of U.S. Highway 50 in the foothills of the Pancake Range. The area in the vicinity of the Easy Junior Mine was surveyed for weeds, but the inventory crew did not survey within the mine perimeter fence.

## Factor 1: The Likelihood of Noxious Weed Species Spreading to the Project Area

Based on the Factor 1 Rating Descriptions provided below, Factor 1 for this project rates as Moderate (6) at the present time. Two large infestations of whitetop were noted in Township 15 North, Range 56 East, Section 9. Several patches of Russian knapweed, about 3,000 square feet each, occur along the access road within one mile of the mine. These infestations are a potential source of seeds. Cheatgrass and halogeton were observed at the site.

**Factor 1 Rating Descriptions**

| | |
|---|---|
| None (0) | Noxious weed species not located within or adjacent to the project area. Project activity is not likely to result in the establishment of noxious weed species in the project area. |
| Low (1-3) | Noxious weed species present in areas *adjacent to but not within the project area*. Project activities can be implemented and prevent the spread of noxious weeds into the project area. |
| Moderate (4-7) | Noxious weed species *located immediately adjacent to or within the project area*. Project activities are likely to result in some areas becoming infested with noxious weed species even when preventative management actions are followed. Control measures are essential to prevent the spread of noxious weeds within the project area. |
| High (8-10) | *Heavy infestations of noxious weeds are located within or immediately adjacent to the project area*. Project activities, *even with preventative management* actions, are likely to result in the establishment and spread of noxious weeds on disturbed sites throughout much of the project area. |

## Factor 2: Assesses the Consequences of Noxious Weed Establishment in the Project Area

Based on the Factor 2 Rating Descriptions provided below, Factor 2 for this project rates as moderate (6). Due to increased ground disturbance as a result of reclamation activities, the likelihood of invasive weed encroachment would increase. Best management practices would be followed in order to prevent the spread of noxious species in the Project Area.

## Factor 2 Rating Descriptions

| | |
|---|---|
| Low (1-3) | No cumulative effects expected. |
| Moderate (4-7) | Possible adverse effects on site and possible expansion of infestation within the project area. Cumulative effects on native plant communities are likely, but limited. |
| High (8-10) | Obvious adverse effects within the project area and probable expansion of noxious weed infestations to areas outside the project area. Adverse cumulative effects on native plant communities are probable. |

***Mitigation***

Employees and contractors would be educated to identify noxious weeds or invasive, non-native species that could occur in the Project Area. Should noxious weeds be identified, BLM would take appropriate measures to prevent their spread. Standard Operating Plans (SOPs) designed to reduce the introduction and spread of weeds during reclamation activities that would be implemented (if applicable) during reclamation activities include:

- All equipment, both incidental and those of implementation, would be cleaned of all vegetative debris prior to mobilizing to the project area to ensure no noxious or invasive weeds are brought to the site;
- All hay or other vegetation used for mulch would have a pasture certification or identification that is free of weeds on the Nevada Noxious Weed list, and/or a feed lot certification stating that weed free feed was consumed by livestock in the production of organic (manure) fertilizers;
- All seed used for reclamation activities would be tested and found to be free of weeds on the Nevada Noxious Weed list;
- Prior to entry of vehicles and equipment to a project area, areas of concern would be identified and flagged in the field by a weed scientist or qualified biologist;
- Gravel pits and fill sources would be inspected to identify weed-free sources. Gravel and fill to be used in relatively weed-free areas must come from weed-free sources. Mineral material reclamation would be inspected for infestation of noxious weeds; and
- Off-road equipment would be cleaned (power or high pressure cleaning) of all mud, dirt, and plant parts before entering and/or departing the site. If vehicle washdowns occur on public land, the location of the washdown sites would be recorded with a GPS and reported to the Authorized Officer.

The reclamation seed mix would consist of native plant species to reduce invasive species over time by maintaining the current plant communities. Because the Project would be within an area

previously invaded by cheatgrass, the disturbance may be revegetated with a short-term aggressive, non-native species to out-compete cheatgrass.

## Risk Rating

The Risk Rating for this project is Moderate (36). The Risk Rating is obtained by multiplying Factor 1 by Factor 2, where Factor 1 is equal to 6 and Factor 2 is equal to 6. Mitigation, as described above, is expected to control noxious weed populations.

**Risk Rating Descriptions**

| | |
|---|---|
| None (0) | Proceed as planned. |
| Low (1-10) | Proceed as planned. Initiate control treatment on noxious weed populations that get established in the area. |
| Moderate (11-49) | Develop preventative management measures for the proposed project to reduce the risk of introduction or spread of noxious weeds into the area. Preventative management measures could include modifying the project to include seeding the area to occupy disturbed sites with desirable species, encouraging project advocate to watch for and report or eradicate any small weed patches in their project area, incorporating weed detection into project compliance inspection activities, encouraging the advocate to attend weed identification workshops when offered, washing vehicles prior to entering project areas, and other actions as appropriate. Monitor the area for at least 3 consecutive years and provide for control of newly established populations of noxious weeds and follow-up treatment for previously treated infestations. |
| High (50-100) | Project must be modified to reduce risk level through preventative management measures, including seeding with desirable species to occupy disturbed sites and controlling existing infestations of noxious weeds prior to project activity, washing all work vehicles before entering the site and at regular intervals throughout the project, requiring project advocate to watch for report and eradicate any small weed patches in their project area, incorporating weed detection into project compliance inspection activities, encouraging the advocate to attend weed identification workshops when offered equipment, Project must provide at least 5 consecutive years of monitoring and follow up weed treatment. |

Reviewed by: Lauri Hunter 5/25/04

Noxious Weed Coordinator Date