2.0 Alternatives Including the Proposed Action

2.1 Introduction

This chapter describes the proposed project as described in the following two PoO documents submitted to the BLM Egan Field Office on October 5, 2011 and June 2012:

- *Bald Mountain Mine (NVN-082888) and Casino/Winrock Mine (NVN-068521): North Operations Area Project PoO Amendment #4 and Reclamation Permit Application* (Barrick 2012a); and
- *Alligator Ridge Mine (NVN-068655) and Yankee Mine (NVN-068259): South Operations Area Project PoO and Reclamation Permit Application* (Barrick 2012b).

All alternatives presented in this chapter, including the No Action Alternative, were developed based on public and agency scoping input and supporting technical information provided by Barrick and reviewed by the BLM. This chapter also includes a summary of alternatives that were considered but eliminated from detailed analysis, and a comparative impact analysis summary of the proposed project alternatives (Section 2.8, Comparative Analysis of Alternatives). A description of past and present actions and RFFAs considered in the cumulative impact assessment is included in Section 2.7, Past, Present, and Reasonably Foreseeable Actions.

Existing/authorized and reclaimed facilities and operations within the existing NOA and SOA are described in Section 2.3, No Action Alternative. Due to the schedule of ongoing authorized mining operations within the proposed PoO boundaries, not all of the previously authorized facilities have been constructed to their final configurations. For the purposes of consolidation, all text and figures herein collectively combine the existing and authorized facilities and operations. For the purposes of this EIS, surface disturbance acreages provided under the No Action Alternative illustrate the existing/authorized disturbance levels and reclamation status, which are used as baseline conditions relative to the expansion of existing facilities and development of new facilities associated with the proposed project. Unless otherwise indicated, elevations in this EIS correlate with U.S. Geological Survey (USGS) feet above mean sea level (amsl).

2.2 Background

The proposed project lies within the Bald Mountain Mining District in the southern Ruby, Buck, Bald, and Little Bald mountains of northeastern Nevada, White Pine County. It is adjacent to Alligator Ridge and straddles Long, Diamond, Huntington, and Newark Valleys approximately 65 air miles northwest of Ely, Nevada, and 25 air miles northeast of Eureka, Nevada. The Bald Mountain Mining District, discovered in 1869, has historically produced gold, silver, copper, antimony, and tungsten ores. The district has been subject to mineral exploration and mining continuing on a small scale for more than 140 years. Existing gold mining operations within the Bald Mountain Mining District include open pit, run-of-mine, heap leach facilities with conventional heap leaching technology, and carbon adsorption for ore treatment. Mines within the district are in various degrees of activity, reclamation, and closure. In 1976, a predecessor company of Placer Dome U.S. Inc., acquired an option on claims within the district and began exploration and mining on a larger scale that has continued until present day (BLM 1995). In 2006, Barrick acquired Placer Dome U.S. Inc. holdings in the area. The proposed project would be owned and operated by Barrick, a wholly owned subsidiary of Barrick Gold Corporation.

The proposed project would:

1. Combine and expand the existing BMM NOA (NVN-08288) and existing Casino/Winrock Mine (NVN-068251) plan boundaries, and the reclaimed White Pine Mine area into a unified mine plan boundary called the proposed NOA project.
2. Combine and expand the existing Alligator Ridge Mine (NVN-068655) and the Yankee Mine (NVN-068259) plan boundaries into a unified mine plan boundary called the proposed SOA project.
3. Develop a Transportation Utility Corridor (TUC) to connect the proposed NOA and SOA projects by improving an existing road to haul road specifications. This TUC would be included as part of the SOA project.

A high-level description of the mining areas within the proposed NOA and SOA project boundaries are described in the following section with further details presented in Section 2.4, Proposed Action.

2.2.1 North Operations Area

Under the Proposed Action, Barrick would combine and expand the existing BMM NOA PoO boundary and the existing Casino/Winrock Mine PoO boundary into a unified PoO boundary called the proposed NOA project. The proposed NOA project includes development and/or expansion of mining and exploration activities within the area currently permitted as the existing BMM NOA, which includes the BMM, Mooney Basin Operations Area, and Little Bald Mountain (LBM) Mine. Under the Proposed Action, existing/authorized facilities, including active open pits; rock disposal areas (RDAs); heap leach facilities (HLFs); ore process areas; interpit areas; access and haul roads; growth media stockpiles (GMSs); and ancillary and support facilities, would be expanded and developed within the proposed NOA project.

The proposed NOA project also includes the development and/or expansion of mining and exploration activities within the area currently permitted as the existing Casino/Winrock Mine. Under the Proposed Action, existing/authorized facilities including, open pits; RDAs; a HLF; ore process area; haul roads; and ancillary and support facilities would be expanded and developed within the proposed NOA project.

The Proposed Action for the NOA project also includes the expansion of mining and exploration activities within the reclaimed White Pine Mine. Under the No Action Alternative, the White Pine Mine, located northeast of the BMM NOA and Casino/Winrock Mine PoO boundaries, would remain closed with the exception of exploration-related activities. This mine was developed by previous owners, closed in 1997, stabilized and reclaimed, and released from reclamation bond in 2006. The White Pine Mine does not currently have an active mine plan. Past disturbance included the development of open pits, RDAs, a HLF, an ore process area, and ancillary facilities. Under the Proposed Action, existing/authorized facilities including open pits; RDAs; interpit areas; access and haul roads; and ancillary and support facilities would be expanded and developed within the proposed NOA project.

Past and existing PoO submittals and amendments, as well as required environmental analyses, for mining operations located within the proposed NOA project boundary (not including the reclaimed White Pine Mine) are summarized in **Table 2.2-1**.

Table 2.2-1 Plan of Operations Submittals and Amendments and Environmental Analyses within the Proposed North Operations Area Project Boundary

Project	3809/NEPA Action	Date	Number
Bald Mountain	ROD	N/A	NVN-068193
	Plan of Operations	Aug-1991	
	Plan of Operations	July-1992	
	Plan of Operations	Dec-1994	
	Plan of Operations (LJ Ridge)	Mar-1997	
	Plan of Operations (BMM Pad #1 Final Plan for Permanent Closure)	Jul-2000	
	Plan of Operations	Nov-2002	
	Amended Plan of Operations	Aug-2005	
	Amended Plan of Operations	May-2006	
Mooney Basin	ROD	Nov-1995	N46-94-010P
	Amendment to the Mooney Basin Plan of Operations and Reclamation Permit Application	Dec-2003	
	2003 Mooney Basin Expansion EA	Mar-2004	
	Amendment to the Mooney Basin Plan of Operations and 2005 Reclamation Permit Application	May-2005	
	BMM 2005 Expansion Environmental Impact Statement and Record of Decision	Nov-2005	
Casino/ Winrock	USMX Proposed Exploration Operation Decision Record	Nov-1988	NV-040-9-2/ N46-89-006P
	USMX Casino Project Decision Record	May-1990	NV-040-90-008/ N46-90-001P
	Casino/Winrock Project Amendment Decision Record	Jun-1991	N-46-90-001P
	Winrock Amendments Project Decision Record	Aug-1994	N-46-90-001P
	Winrock Exploration Plan Decision Record	Dec-2004	NV-040-05-009/ NVN-068521
	Casino/Winrock Mine Plan Minor Modification Decision Record	Sep-2005	NV-040-05-009/ NVN-068521
	Casino/Winrock Mine Plan Amendment Decision Record	Jul-2009	DOI-BLM-NV-L010-2009-0022-EA/ NVN-068521

Table 2.2-1 Plan of Operations Submittals and Amendments and Environmental Analyses within the Proposed North Operations Area Project Boundary

Project	3809/NEPA Action	Date	Number
NOA (existing permit area)	Final EIS for the *Bald Mountain Mine North Operations Area Project*	Sept-2009	NVN-082888
	ROD for the *Bald Mountain Mine North Operations Area Project*[1]	Feb-2010	
	Determination of NEPA Adequacy (DNA) for the Amendment to the BMM NOA PoOs	Jul-2010	NVN-082888/ DOI-BLM-NV-L010-2010-0034-DNA
	Amended PoOs for the Mooney and LBM Expansion Decision Record	Jul-2011	NVN-082888

[1] The NOA ROD combined the Bald Mountain and Mooney Basin Operations.

Source: Barrick 2012a.

2.2.2 South Operations Area

Under the Proposed Action, the existing Alligator Ridge Mine and Yankee Mine PoO boundaries would be expanded and combined into a unified PoO boundary called the SOA project. The proposed SOA project would include the development and/or expansion of mining activities within the areas currently permitted as the existing Alligator Ridge Mine and Yankee Mine. The existing Alligator Ridge Mine is located in the northern portion of the proposed SOA project PoO boundary and includes the Vantage and Luxe facilities, which have been in reclamation and closure status since 1990. The open pit mine operated from 1981 to 1987. Milling and crushing facilities closed in 1990, and the ancillary facilities were removed by 1998. Leaching and secondary leaching of the heaps continued through 1997. Most of the reclamation and closure activities have been completed to date; the Nevada Water Pollution Control Permit (WPCP) was retired in 2006. Under the Proposed Action, existing/authorized facilities including open pits; RDAs; HLFs; ore process areas; interpit areas; access and haul roads; GMSs; and ancillary and support facilities would be expanded and developed within the proposed SOA project.

The existing Yankee Mine is located in the southern portion of the proposed SOA project PoO boundary, which has been in reclamation and closure status since 1998. Mining activities at the Yankee Mine began prior to 1981 when Amselco Minerals Inc. conducted exploration drilling, mining, and heap leaching in addition to constructing ancillary facilities, such as power lines, buildings, storage facilities, crushing facilities, and wells. The open pit operations ceased in 1998. Leaching and secondary leaching of the heaps ceased in the spring of 1999. In 2001, Placer Dome U.S., Inc. proposed to permanently close the Yankee HLF, and final reclamation was completed by 2008. Under the Proposed Action, existing/authorized facilities including open pits; RDAs; a HLF; an ore process area; inter-pit areas; access and haul roads; GMSs; and ancillary and support facilities would be expanded and developed within the proposed SOA project.

Past and existing PoO submittals and amendments, in addition to other environmental analyses, for mining operations located within the proposed SOA project boundary are summarized in **Table 2.2-2**.

Table 2.2-2 Plan of Operations Submittals and Amendments and Environmental Analyses within the Proposed South Operations Area Project Boundary

Project	3809/NEPA Action	Date	Number
Vantage-Luxe-Yankee	NOI to Continue Existing Operations	Mar-1981	NVN-0446-018N
Alligator Ridge Mine	Alligator Ridge Tailings Impoundment Decision Record/FONSI *	Feb-1987	NV-040-7-7
	EA for Amselco Proposed Haul Road Bald Mountain Top Area to Alligator Ridge	Sep-1988	NV-040-88-022
	Alligator Ridge Operations and Reclamation Plan EA	Aug-1992	EA-NV-040-92-12
	Decision Record/FONSI	Mar-1993	N46-92-005P
	Bioremediation Facility Administrative Determination	Oct-1995	N/A
	Revised Reclamation Plan for the Alligator Ridge Mine	May-1998	N/A
	Alligator Ridge Exploration Program	Sep-2003	N/A
	Barrick BMM – Vantage Exploration Project EA	Apr-2008	NV-043-08-022
	Decision Record/FONSI – Vantage Exploration Project	Apr-2008	NV-043-08-002
Yankee Mine	Yankee Prospect Area EA	Nov-1984	NV-0446-4-024P
	EA of Yankee Area Open Pit Mines	Nov-1988	NV-040-88-020
	Decision Record/FONSI – Yankee Area Open Pit Mine	Nov-1988	NV-46-88-24P
	Yankee Mine Plan Environmental Review	Jul-1989	N46-84-024P
	Yankee Amendment Supplemental EA	Aug-1991	NV-040-88-020-S1-91
	Yankee Amendment Supplemental EA ROD/FONSI	Nov-1991	N46-84-024P
	Waste Dumps Administrative Determination	Feb-1992	N46-84-024P
	Phase II Project PoOs Environmental Review	Apr-1992	N46-84-024P
	Monitor Pit Administrative Determination	Mar-1993	N46-84-024P
	1993 Yankee Project Amendment Decision Record/FONSI	Jan-1994	NV-040-88-020-S2-93
	Blue and Grey Pits Amendment Administrative Determination	Jun-1994	N46-84-024P
	Blue Extent Pit Administrative Determination	Apr-1995	N46-84-024P
	Davis and Olustee Pits Amendment Administrative Determination	Dec-1995	N46-84-024P

Table 2.2-2 Plan of Operations Submittals and Amendments and Environmental Analyses within the Proposed South Operations Area Project Boundary

Project	3809/NEPA Action	Date	Number
Yankee Mine (cont.)	Plan Conformance/NEPA Compliance Record for Yankee Project Minor Modification	Apr-1996	N/A
	Yankee Mine Project Amendment for Leach Pad Expansion Administrative Decision	Apr-1997	N46-84-024P
	Yankee Mine Project Amendment for the Expansion of the Olustee Pit and Heap Leach Pad Administrative Decision	Jan-1998	N46-84-024P
	Yankee Closure Project EA	Jun-2001	NV-040-01-59
	Yankee Closure Project Decision Record/FONSI	Jun-2001	N46-84-024P
	Yankee Exploration Project EA	Feb-2008	NV-040-08-016
	Yankee Exploration Project Decision Record/FONSI	Feb-2008	N46-84-024P

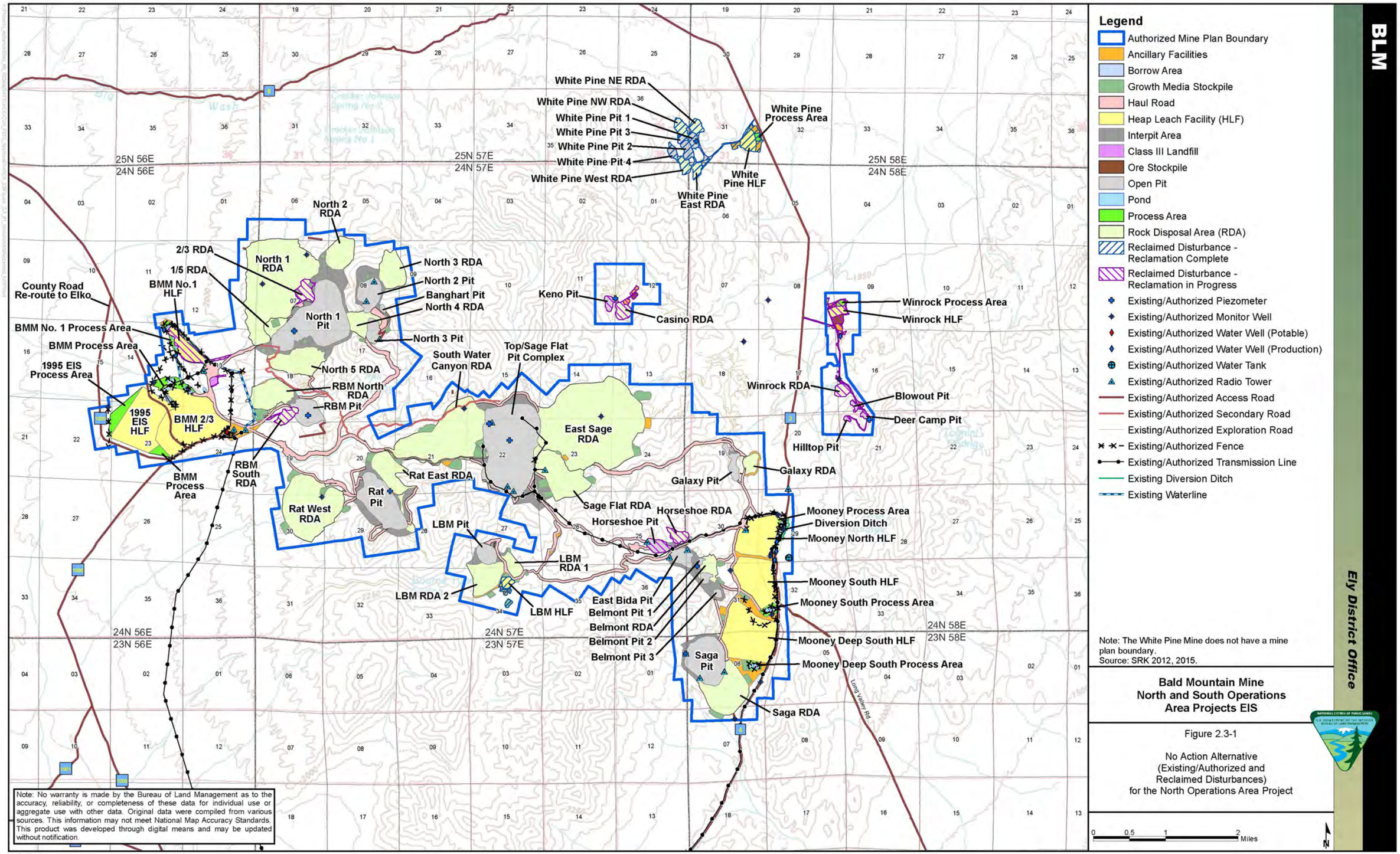
* FONSI = Finding of Not Significant Impact.

Source: Barrick 2012b.

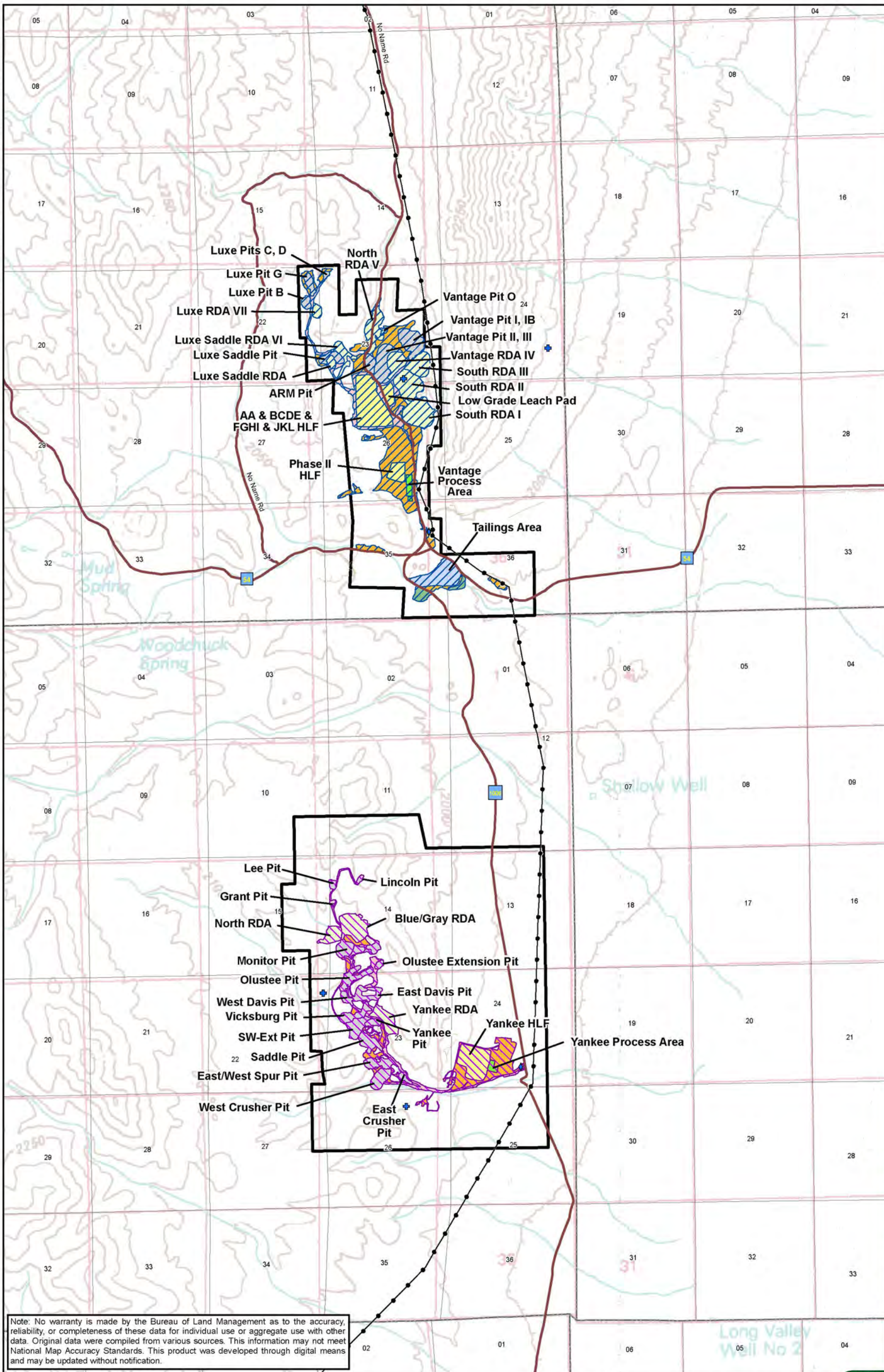
2.3 No Action Alternative

Under the No Action Alternative, construction of all previously authorized expansion and associated facilities would continue. Barrick would continue its operations and closure and reclamation activities within the NOA and SOA boundaries under the terms and current permits and approvals as authorized by the BLM and State of Nevada. Exploration activities would continue in accordance with the regional exploration PoO (NVN-078825) and existing plan amendments. Current approvals within the existing NOA and SOA are summarized in **Tables 2.2-1** and **2.2-2**, respectively.

The following section describes the existing/authorized and reclaimed facilities within the existing NOA and SOA boundaries as described in the proposed NOA and SOA project PoOs (Barrick 2012a,b). **Figures 2.3-1** and **2.3-2** illustrate the existing/authorized and reclaimed disturbances for the No Action Alternative within the NOA and SOA boundaries, respectively. **Figures 2.3-3** and **2.3-4** illustrate the post-mining reclamation topography within the NOA and SOA boundaries under the No Action Alternative, respectively. **Tables 2.3-1** and **2.3-2** summarize the existing/authorized and reclaimed surface disturbances for the No Action Alternative within the NOA and SOA boundaries, respectively. The acreage values presented in **Tables 2.3-1** and **2.3-2** were derived from the proposed NOA and SOA project PoOs (Barrick 2012a,b). The facility footprints illustrated in **Figures 2.3-1** and **2.3-2** may vary due to minor discrepancies in historic facility footprint dimensions.


White Pine NE RDA
White Pine NW RDA
White Pine Pit 1
White Pine Pit 3
White Pine Pit 2
White Pine Pit 4
White Pine West RDA
White Pine Process Area
White Pine HLF
White Pine East RDA
25N 56E
24N 56E
25N 57E
24N 57E
25N 58E
24N 58E
North 2 RDA
2/3 RDA
1/5 RDA
North 1 RDA
North 3 RDA
North 2 Pit
Banghart Pit
North 4 RDA
North 1 Pit
North 3 Pit
County Road Re-route to Elko
BMM No.1 HLF
BMM No. 1 Process Area
BMM Process Area
1995 EIS Process Area
1995 EIS HLF
BMM 2/3 HLF
BMM Process Area
RBM South RDA
North 5 RDA
RBM North RDA
RBM Pit
Keno Pit
Casino RDA
Winrock Process Area
Winrock HLF
Winrock RDA
Blowout Pit
Deer Camp Pit
Hilltop Pit
Top/Sage Flat Pit Complex
South Water Canyon RDA
East Sage RDA
Galaxy Pit
Galaxy RDA
Rat East RDA
Rat Pit
Rat West RDA
Sage Flat RDA
Horseshoe RDA
Horseshoe Pit
Mooney Process Area
Diversion Ditch
Mooney North HLF
LBM Pit
LBM RDA 1
LBM RDA 2
LBM HLF
East Bida Pit
Belmont Pit 1
Belmont RDA
Belmont Pit 2
Belmont Pit 3
Mooney South HLF
Mooney South Process Area
Mooney Deep South HLF
Mooney Deep South Process Area
Saga Pit
Saga RDA
Long Valley Rd
24N 56E
23N 56E
24N 57E
23N 57E
24N 58E
23N 58E
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.
Legend
Authorized Mine Plan Boundary
Ancillary Facilities
Borrow Area
Growth Media Stockpile
Haul Road
Heap Leach Facility (HLF)
Interpit Area
Class III Landfill
Ore Stockpile
Open Pit
Pond
Process Area
Rock Disposal Area (RDA)
Reclaimed Disturbance - Reclamation Complete
Reclaimed Disturbance - Reclamation in Progress
Existing/Authorized Piezometer
Existing/Authorized Monitor Well
Existing/Authorized Water Well (Potable)
Existing/Authorized Water Well (Production)
Existing/Authorized Water Tank
Existing/Authorized Radio Tower
Existing/Authorized Access Road
Existing/Authorized Secondary Road
Existing/Authorized Exploration Road
Existing/Authorized Fence
Existing/Authorized Transmission Line
Existing Diversion Ditch
Existing Waterline
Note: The White Pine Mine does not have a mine plan boundary.
Source: SRK 2012, 2015.
Bald Mountain Mine
North and South Operations
Area Projects EIS
Figure 2.3-1
No Action Alternative
(Existing/Authorized and
Reclaimed Disturbances)
for the North Operations Area Project
0 0.5 1 2 Miles
N
BLM
Ely District Office

4/4/2016



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

Legend

- Authorized Mine Plan Boundary
- Ancillary Facilities
- Growth Media Stockpile
- Haul Road
- Heap Leach Facility (HLF)
- Open Pit
- Process Area
- Rock Disposal Area (RDA)
- Tailings
- Reclaimed Disturbance - Reclamation Complete
- Reclaimed Disturbance - Reclamation in Progress
- Existing/Authorized Piezometer
- Existing/Authorized Water Well (Production)
- Existing/Authorized Access Road
- Existing/Authorized Transmission Line

Note: The Blue, Blue Extension and Gray pits have been backfilled with carbonate-rich material, and covered by the Blue/Gray RDA.
Source: SRK 2012, 2015.
2/10/2016

Bald Mountain Mine North and South Operations Area Projects EIS

Figure 2.3-2

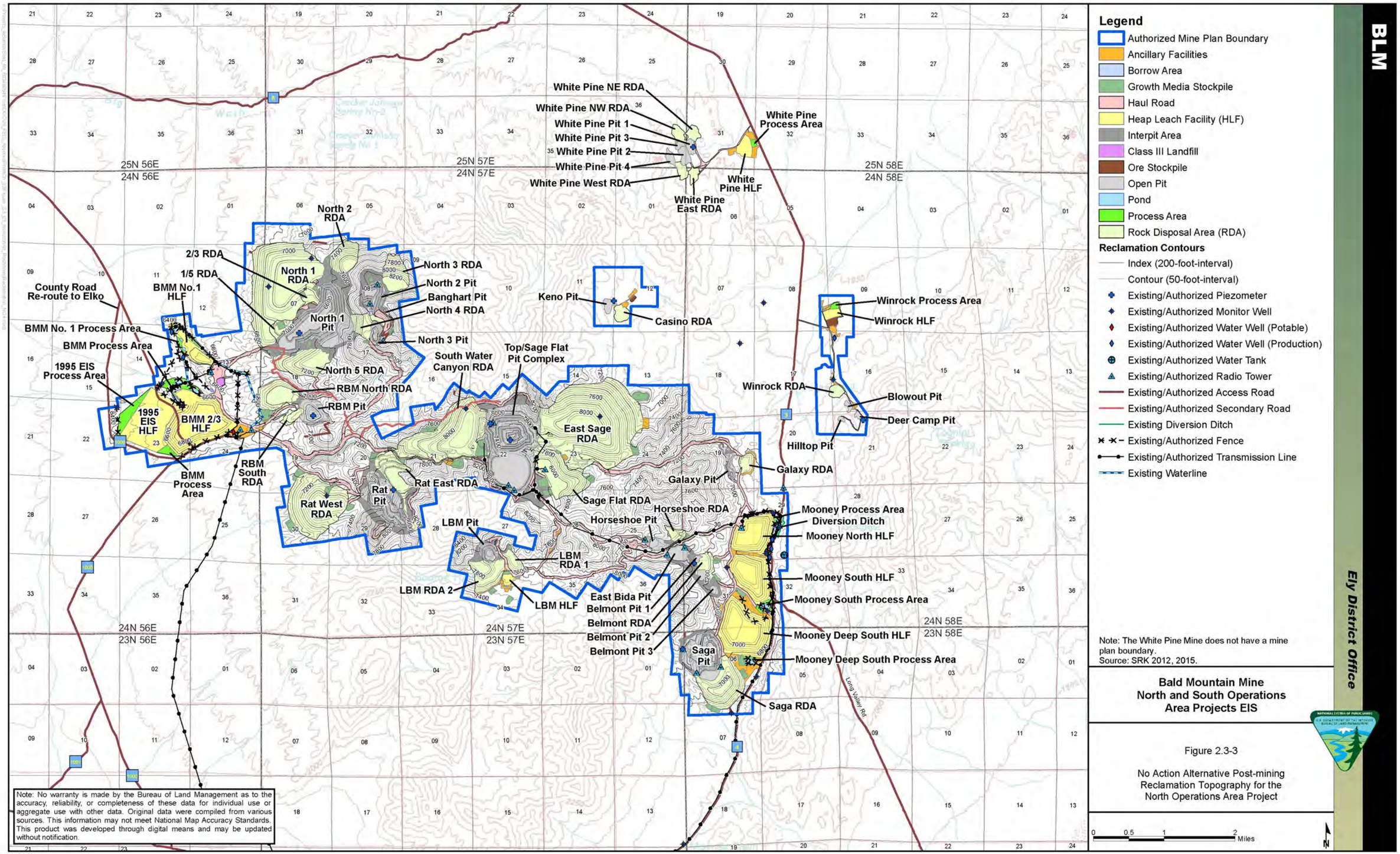
No Action Alternative (Existing/Authorized and Reclaimed Disturbances) for the South Operations Area Project

0 0.25 0.5 1 Miles

N

BLM

Ely District Office


Legend
Authorized Mine Plan Boundary
Ancillary Facilities
Borrow Area
Growth Media Stockpile
Haul Road
Heap Leach Facility (HLF)
Interpit Area
Class III Landfill
Ore Stockpile
Open Pit
Pond
Process Area
Rock Disposal Area (RDA)
Reclamation Contours
Index (200-foot-interval)
Contour (50-foot-interval)
Existing/Authorized Piezometer
Existing/Authorized Monitor Well
Existing/Authorized Water Well (Potable)
Existing/Authorized Water Well (Production)
Existing/Authorized Water Tank
Existing/Authorized Radio Tower
Existing/Authorized Access Road
Existing/Authorized Secondary Road
Existing Diversion Ditch
Existing/Authorized Fence
Existing/Authorized Transmission Line
Existing Waterline
Note: The White Pine Mine does not have a mine plan boundary.
Source: SRK 2012, 2015.
Bald Mountain Mine
North and South Operations
Area Projects EIS
Figure 2.3-3
No Action Alternative Post-mining Reclamation Topography for the North Operations Area Project
0 0.5 1 2 Miles
N
BLM
Ely District Office
White Pine NE RDA
White Pine NW RDA
White Pine Pit 1
White Pine Pit 3
White Pine Pit 2
White Pine Pit 4
White Pine West RDA
White Pine East RDA
White Pine Process Area
White Pine HLF
25N 56E
24N 56E
25N 57E
24N 57E
25N 58E
24N 58E
North 2 RDA
2/3 RDA
1/5 RDA
North 1 RDA
North 3 RDA
North 2 Pit
Banghart Pit
North 4 RDA
North 1 Pit
North 3 Pit
County Road Re-route to Elko
BMM No.1 HLF
BMM No. 1 Process Area
BMM Process Area
1995 EIS Process Area
1995 EIS HLF
BMM 2/3 HLF
BMM Process Area
RBM South RDA
North 5 RDA
RBM North RDA
RBM Pit
Keno Pit
Casino RDA
Winrock Process Area
Winrock HLF
Winrock RDA
Blowout Pit
Deer Camp Pit
Hilltop Pit
Top/Sage Flat Pit Complex
South Water Canyon RDA
East Sage RDA
Galaxy RDA
Galaxy Pit
Rat East RDA
Rat Pit
Rat West RDA
Sage Flat RDA
Horseshoe RDA
Horseshoe Pit
Mooney Process Area
Diversion Ditch
Mooney North HLF
LBM Pit
LBM RDA 1
LBM RDA 2
LBM HLF
Mooney South HLF
Mooney South Process Area
East Bida Pit
Belmont Pit 1
Belmont RDA
Belmont Pit 2
Belmont Pit 3
Mooney Deep South HLF
Saga Pit
Mooney Deep South Process Area
Saga RDA
Long Valley Rd
24N 56E
23N 56E
24N 57E
23N 57E
24N 58E
23N 58E
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

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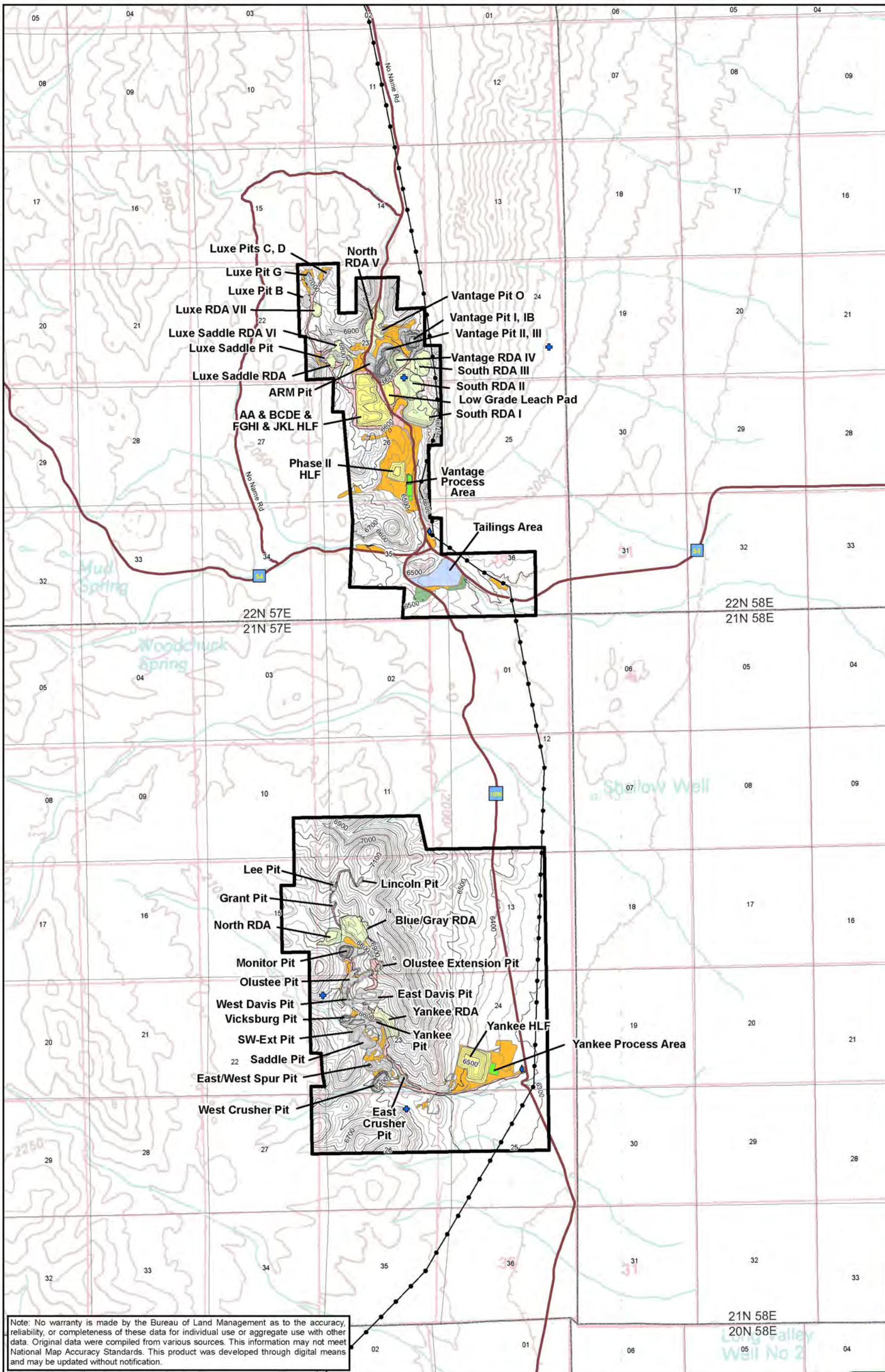


Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product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

Legend

- Authorized Mine Plan Boundary
- Ancillary Facilities
- Growth Media Stockpile
- Haul Road
- Heap Leach Facility (HLF)
- Open Pit
- Process Area
- Rock Disposal Area (RDA)
- Tailings

Reclamation Contours

- Index (100-foot-interval)
- Contour (25-foot interval)
- Existing/Authorized Piezometer
- Existing/Authorized Water Well (Production)
- Existing/Authorized Access Road
- Existing/Authorized Transmission Line

Note: The Blue, Blue Extension, and Gray pits have been backfilled with carbonate-rich material, and covered by the Blue/Gray RDA.
Source: SRK 2012, 2015.

2/10/2016

Bald Mountain Mine North and South Operations Area Projects EIS

Figure 2.3-4

No Action Alternative Post-mining Reclamation Topography for the South Operations Area Project

0 0.5 1 2 Miles

BLM

Ely District Office

Table 2.3-1 No Action Alternative – Existing/Authorized and Reclaimed Surface Disturbance within the North Operations Area Project

Project Component	Existing/ Authorized Surface Disturbance (acres)	Reclaimed Surface Disturbance (acres)		Total Surface Disturbance (acres)
		Reclamation in Progress[1]	Reclamation Complete[2]	
Bald Mountain Mine				
Open Pits				
Banghart Pit[3]	5	0	0	5
Belmont Pit 1	4	0	0	4
Belmont Pit 2	12	0	0	12
Belmont Pit 3	7	0	0	7
East Bida Pit	39	0	0	39
Galaxy Pit	34	0	0	34
Horseshoe Pit	33	33	0	33
LBM Pit	41	0	0	41
North 1 Pit	377	0	0	377
North 2 Pit	75	0	0	75
North 3 Pit	35	0	0	35
Rat Pit	195	0	0	195
RBM Pit	74	0	0	74
Saga Pit	189	0	0	189
Top/Sage Flat Pit Complex	533	0	0	533
Rock Disposal Areas				
1/5 RDA	33	0	0	33
2/3 RDA	38	38	0	38
Belmont RDA	39	0	0	39
East Sage RDA	897	0	0	897
Galaxy RDA	31	31	0	31
Horseshoe RDA	25	25	0	25
LBM RDA 1	36	0	0	36
LBM RDA 2	105	0	0	105
North 1 RDA	607	0	0	607
North 2 RDA	90	0	0	90
North 3 RDA	97	0	0	97
North 4 RDA	61	0	0	61
North 5 RDA	141	0	0	141

Table 2.3-1 No Action Alternative – Existing/Authorized and Reclaimed Surface Disturbance within the North Operations Area Project

Project Component	Existing/ Authorized Surface Disturbance (acres)	Reclaimed Surface Disturbance (acres)		Total Surface Disturbance (acres)
		Reclamation in Progress[1]	Reclamation Complete[2]	
Rat East RDA	164	0	0	164
Rat West RDA	351	0	0	351
RBM North RDA	133	0	0	133
RBM South RDA	30	30	0	30
Saga RDA	185	0	0	185
Sage Flat RDA	206	0	0	206
South Water Canyon RDA	461	0	0	461
Heap Leach Facilities and Ore Process Areas				
1995 EIS HLF	270	0	0	270
BMM 2/3 HLF	351	0	0	351
BMM No. 1 HLF	65	65	0	65
BMM and 1995 EIS Process Areas	145	0	0	145
LBM HLF	14	0	14	0
Mooney North HLF	166	0	0	166
Mooney North Process Area	20	0	0	20
Mooney South HLF	185	0	0	185
Mooney South Process Area	21	0	0	21
Mooney Deep South HLF	296	0	0	296
Mooney Deep South Process Area	14	0	0	14
Interpit Areas and Haul Roads				
Interpit Areas	582	0	0	582
Haul Roads	732	5	0	732
Ancillary and Support Facilities				
Access Roads	9	0	0	9
Ancillary Facilities[4]	231	2	7	225
GMSs	154	0	6	148
Piezometer and Monitoring Well Sites	1	0	0	1
Pond	1	0	1	0

Table 2.3-1 No Action Alternative – Existing/Authorized and Reclaimed Surface Disturbance within the North Operations Area Project

Project Component	Existing/ Authorized Surface Disturbance (acres)	Reclaimed Surface Disturbance (acres)		Total Surface Disturbance (acres)
		Reclamation in Progress[1]	Reclamation Complete[2]	
Radio Tower	0	0	0	0
Transmission Line Corridor	6	0	0	6
Bald Mountain Mine Subtotal	**8,646**	**229**	**27**	**8,619**
Casino/Winrock Mine				
Open Pits				
Blowout Pit	10	10	0	10
Deer Camp Pit	5	5	0	5
Hilltop Pit	4	4	0	4
Keno Pit	15	15	0	15
Rock Disposal Areas				
Casino RDA	27	27	0	27
Winrock RDA	20	20	0	20
Heap Leach Facilities and Ore Process Areas				
Winrock HLF	19	19	0	19
Winrock Process Area	6	6	0	6
Interpit Areas and Haul Roads				
Haul Roads	77	21	0	77
Ancillary and Support Facilities				
Ancillary Facilities	29	29	0	29
Ore Stockpile	15	15	0	15
Casino/Winrock Mine Subtotal	**226**	**170**	**0**	**226**
White Pine Mine				
Open Pits				
White Pine Pit 1	15	0	15	0
White Pine Pit 2	20	0	20	0
White Pine Pit 3	7	0	7	0
White Pine Pit 4	14	0	14	0
Rock Disposal Areas				
White Pine East RDA	16	0	16	0
White Pine NE RDA	20	0	20	0

Table 2.3-1 No Action Alternative – Existing/Authorized and Reclaimed Surface Disturbance within the North Operations Area Project

Project Component	Existing/ Authorized Surface Disturbance (acres)	Reclaimed Surface Disturbance (acres)		Total Surface Disturbance (acres)
		Reclamation in Progress[1]	Reclamation Complete[2]	
White Pine NW RDA	22	0	22	0
White Pine West RDA	19	0	19	0
Heap Leach Facilities and Ore Process Areas				
White Pine HLF	32	0	32	0
White Pine Process Area	5	0	5	0
Interpit Areas and Haul Roads				
Haul Roads	17	0	17	0
Ancillary and Support Facilities				
Ancillary Facilities	21	0	21	0
White Pine Mine Subtotal	**208**	**0**	**208**	**0**
Exploration	**475**	**0**	**0**	**475**
Total[5]	**9,555**	**399**	**235**	**9,320**

[1] Reclamation in Progress are those project components which have not received BLM or state agency approval for completion of reclamation work, but Barrick is in the process of completing the reclamation requirements. These acres are included within the Total Surface Disturbance calculation.

[2] Reclamation Completed are those project components which have received BLM or state agency written approval for completion of reclamation work. These acres are not included in the Total Surface Disturbance calculation.

[3] The Banghart Pit was included above due to its presence within the NOA; however, this facility was not discussed within the NOA PoO (Barrick 2012a). Barrick is not required to reclaim this facility.

[4] Ancillary facilities include office area, borrow area, landfill, diversion ditch, and ponds in total.

[5] Totals may vary due to rounding.

Source: Barrick 2012a.

Table 2.3-2 No Action Alternative – Existing/Authorized and Reclaimed Surface Disturbance within the South Operations Area Project

Project Component	Existing/ Authorized Surface Disturbance (acres)	Reclaimed Surface Disturbance (acres)		Total Surface Disturbance (acres)
		Reclamation in Progress[1]	Reclamation Complete[2]	
Alligator Ridge Mine				
Open Pits				
Luxe Pits B, C, D, G	18	0	18	0
Vantage Pits O, I, IB, II, III, ARM Pit, and Luxe Saddle Pit	95	0	95	0
Rock Disposal Areas				
ARM RDA (Pit Backfill)	3	0	3	0
Luxe RDA VII	5	0	5	0
Luxe Saddle RDA VI	6	0	6	0
Luxe Saddle RDA VII	2	0	2	0
North RDA V	18	0	18	0
Reclamation Stockpiles	9	0	9	0
South RDA I, II, and III	61	0	61	0
Vantage IV (Pit Backfill)	5	0	5	0
Heap Leach Facilities and Ore Process Areas				
Vantage HLF (AA & BCDE & FGHI & JKL), Low Grade Leach Pad, and Phase II HLF	87	0	87	0
Vantage Process Areas	18	0	18	0
Tailings Area	38	0	38	0
Haul Roads				
Haul Roads	51	0	51	0
Ancillary and Support Facilities				
Ancillary Facilities	128	0	128	0
Secondary Roads and Ramps	31	0	31	0
Maintenance/Administration Facilities	11	0	11	0
Silt Pits	9	0	9	0
Alligator Ridge Mine Subtotal	**594**	**0**	**594**	**0**

Table 2.3-2 No Action Alternative – Existing/Authorized and Reclaimed Surface Disturbance within the South Operations Area Project

Project Component	Existing/ Authorized Surface Disturbance (acres)	Reclaimed Surface Disturbance (acres)		Total Surface Disturbance (acres)
		Reclamation in Progress[1]	Reclamation Complete[2]	
Yankee Mine				
Open Pits				
Yankee Pits	95	95	0	95
Lee Pit	3	3	0	3
Lincoln Pit	2	2	0	2
Rock Disposal Areas				
Yankee RDAs	70	70	0	70
Heap Leach Facilities and Ore Process Areas				
Yankee HLF	37	37	0	37
Yankee Process Area	34	34	0	34
Haul Roads				
Haul Roads	32	32	0	32
Ancillary and Support Facilities				
Ancillary Facilities	4	4	0	4
Borrow Area	5	5	0	5
Secondary Roads and Ramps	17	17	0	17
Yankee Mine Subtotal	**297**	**297**	**0**	**297**
Exploration	**69**	**0**	**0**	**69**
Total[3]	**960**	**297**	**594**	**366**

[1] Reclamation in Progress are those project components which have not received BLM or state agency approval for completion of reclamation work, but Barrick is in the process of completing the reclamation requirements. These acres are included within the Total Surface Disturbance calculation.

[2] Reclamation Completed are those project components which have received BLM or state agency written approval for completion of reclamation work. These acres are not included in the Total Surface Disturbance calculation.

[3] Totals may vary due to rounding.

Source: Barrick 2012a.

2.3.1 North Operations Area

Under the No Action Alternative, the existing/authorized and reclaimed mine facilities within the NOA including, the existing BMM NOA (NVN-82888) PoO boundary, Casino/Winrock Mine (NVN-068251) PoO boundary, and White Pine Mine area, would continue to be managed as currently permitted. The existing BMM NOA PoO boundary encompasses approximately 17,563 acres, and the existing Casino/Winrock Mine PoO boundary encompasses approximately 947 acres. A PoO boundary does not exist for the existing White Pine Mine, as it has been completely reclaimed. Previous BLM approvals have authorized a total of approximately 9,555 acres of surface disturbance within the existing NOA, of which 235 acres (2 percent) have been fully reclaimed. An additional 399 acres (4 percent) of surface disturbance within the existing NOA are in the process of reclamation (**Table 2.3-1**).

2.3.1.1 Land Ownership and Mining Claims

Figure 2.3-5 illustrates the surface ownership within the NOA and SOA boundaries. Under the No Action Alternative, the existing BMM NOA and Casino/Winrock Mine PoO boundaries would remain the same and would encompass a total of 18,509 acres, including 18,303 acres of BLM-administered land and 206 acres of private land.

Authorized mining and related surface disturbances would be conducted on unpatented lode claims that are owned, leased, or controlled by Barrick on BLM-administered public lands or on private land controlled by Barrick.

2.3.1.2 Schedule and Work Force

Under the No Action Alternative, open pit mining is anticipated to continue through 2022. Ore processing would continue for approximately 3 years after mining operations cease, while closure activities, reclamation, and post-closure fluid monitoring would continue for a minimum of 5 years for each closed component. Approximately 410 workers, including 40 full-time contractors, would remain directly employed by Barrick to conduct operational-related activities within the existing NOA. After the end of mining in 2022, employment would taper down to approximately three workers at the end of closure, reclamation and fluid monitoring as the final component. The annual operations work force payroll would be expected to be similar to the 2013 payroll of approximately $45,558,000, including benefits, declining with the gradual reduction in work force after 2022.

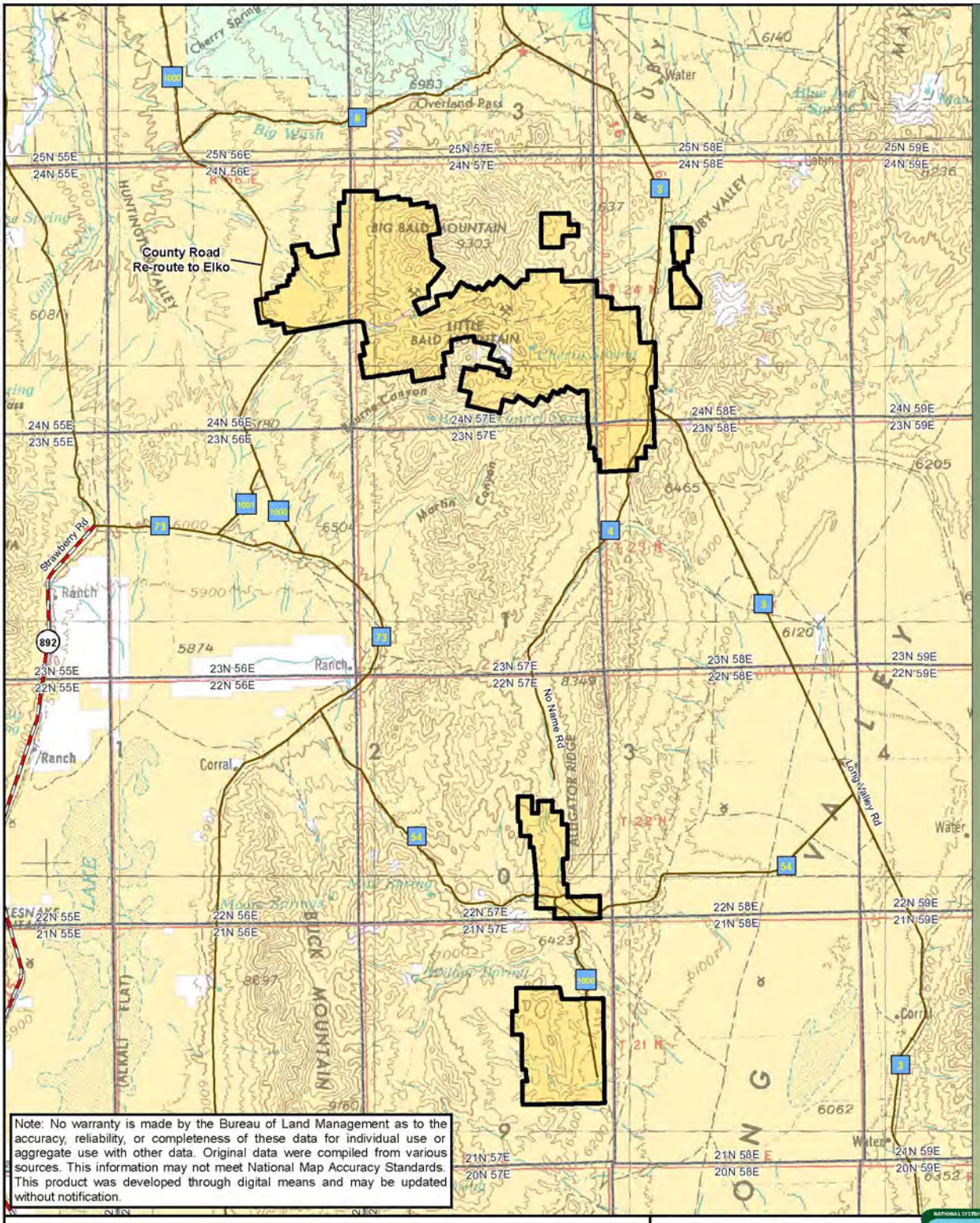
Reclamation would continue to occur concurrently with mining operations in consultation with the BLM and NDOW as areas become available, and when reclamation could be completed in a safe and effective matter. Final reclamation would be completed within 5 years following cessation of ore processing. Post-closure monitoring, as directed by NDEP, could continue up to 30 years following completion of processing based on current regulations. The duration of post-closure monitoring would depend on the project's final closure plan and its implementation.

2.3.1.3 Existing Bald Mountain Mine North Operations Area

The following section summarizes the existing/authorized and reclaimed facilities within the existing BMM NOA PoO boundary as shown in **Figure 2.3-1** and described in **Table 2.3-1**.

<u>Existing/Authorized Open Pits</u>

Under the No Action Alternative, 14 existing/authorized open pits (i.e., Belmont Pits 1, 2, and 3; East Bida Pit; Galaxy Pit; LBM Pit; North Pits 1, 2, 3; Banghart Pit; Rat Pit; RBM Pit; Saga Pit; and Top/Sage Flat Pit Complex) would remain active within the existing BMM NOA PoO boundary. Under the No Action Alternative, the existing/authorized Horseshoe Pit would remain in reclamation status.



Legend

Authorized Mine Plan Boundary

Land Ownership

- Bureau of Land Management
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- Private

Source: BLM 2014d, SRK 2012.

Bald Mountain Mine North and South Operations Area Projects EIS

Figure 2.3-5

No Action Alternative
Land Ownership for the
North and South Operations Area Projects

0 1 2 3 4 5 Miles

BLM

Ely District Office

2/15/2016

A detailed description of open pits and pit parameters within the existing BMM NOA PoO boundary are presented within the *Final Environmental Impact Statement for the Bald Mountain Mine North Operations Area Project* (BLM 2009a), the two DNAs for the BMM (BLM 2010a,b), and the *Environmental Assessment for the Mooney Heap and Little Bald Mountain Expansion Project* (BLM 2011a).

Existing/Authorized Rock Disposal Areas

Under the No Action Alternative, 16 existing/authorized and reclaimed RDAs (i.e., Belmont RDA; East Sage RDA; LBM RDA 1; LBM RDA 2; 1/5 RDA; North 1 RDA; North 2 RDA; North 3 RDA; North 4 RDA; North 5 RDA; Rat East RDA; Rat West RDA; RBM North RDA; Saga RDA; Sage Flat RDA; and South Water Canyon RDA) would remain active within the existing BMM NOA PoO boundary. Under the No Action Alternative, four existing/authorized RDAs (i.e., 2/3 RDA, Galaxy RDA, Horseshoe RDA, and RBM South RDA) would remain in reclamation status.

A detailed description of RDA construction and waste rock management specifications within the existing BMM NOA PoO boundary are presented within the *Final Environmental Impact Statement for the Bald Mountain Mine North Operations Area Project* (BLM 2009a), the two DNAs for the BMM (BLM 2010a,b), and the *Environmental Assessment for the Mooney Heap and Little Bald Mountain Expansion Project* (BLM 2011a).

Existing/Authorized Heap Leach Facilities and Ore Process Areas

Under the No Action Alternative, five existing/authorized HLFs (i.e., BMM 2/3 HLF [including 1995 EIS HLF expansion]; Mooney North HLF; Mooney South HLF; and Mooney Deep South HLF) and six ore process areas (i.e., BMM No. 1 Process Area; BMM Process Area [including 1995 EIS Expansion]; and Mooney Basin Processing Facilities [including Mooney Process Area, Mooney South Process Area, and Mooney Deep South Process Area]) would remain active within the existing BMM NOA PoO boundary. Under the No Action Alternative, one existing/authorized HLF (i.e., BMM No. 1 HLF) would remain in reclamation status; and one existing/authorized HLF (i.e., LBM HLF and White Pine HLF) would remain in closure status.

A detailed description of design and operation parameters for existing/authorized HLFs and associated support facilities within the existing BMM NOA PoO boundary are presented within the *Final Environmental Impact Statement for the Bald Mountain Mine North Operations Area Project* (BLM 2009a), the two DNAs for the BMM (BLM 2010a,b), and the *Environmental Assessment for the Mooney Heap and Little Bald Mountain Expansion Project* (BLM 2011a).

Existing/Authorized Interpit Areas, Access Roads, and Haul Roads

Under the No Action Alternative, the existing interpit areas, access roads, and haul roads would continue to be used for the remainder of the authorized operations. A detailed description of interpit areas, access roads, and haul roads are presented within the *Final Environmental Impact Statement for the Bald Mountain Mine North Operations Area Project* (BLM 2009a), the two DNAs for the BMM (BLM 2010a,b), and the *Environmental Assessment for the Mooney Heap and Little Bald Mountain Expansion Project* (BLM 2011a).

Existing/Authorized Ancillary and Support Facilities

Under the No Action Alternative, the existing ancillary and support facilities would continue to be used for the remainder of the authorized operations. Existing/authorized ancillary and support facilities include the following: GMSs, borrow pits, transmission lines and substations, communication sites, water line corridors, fences, ancillary areas, yards, ponds, diversion ditches, and buildings. A detailed description of ancillary and support facilities is presented within the *Final Environmental Impact Statement for the Bald Mountain Mine North Operations Area Project* (BLM 2009a), the *Environmental Assessment for the Mooney Heap and Little Bald Mountain Expansion Project* (BLM 2011a), and the two DNAs for the BMM (BLM 2010a,b).

Existing/Authorized Exploration

Under the No Action Alternative, exploration activities would continue in accordance with the regional exploration PoO (NVN-078825), existing plan amendments, the *Final Environmental Impact Statement for the Bald Mountain Mine North Operations Area Project* (BLM 2009a), and the *Environmental Assessment for the Mooney Heap and Little Bald Mountain Expansion Project* (BLM 2011a). Current approvals for the existing NOA are summarized in **Table 2.2-1**.

2.3.1.4 Casino/Winrock Mine

The following section summarizes the existing/authorized and reclaimed facilities within the existing Casino/Winrock Mine PoO boundary as shown in **Figure 2.3-1** and described in **Table 2.3-1**.

Existing/Authorized Open Pits

Under the No Action Alternative, four existing/authorized and reclaimed open pits (i.e., Hilltop Pit, Blowout Pit, Deer Camp Pit, and Keno Pit) would remain inactive within the existing Casino/Winrock Mine PoO boundary. The Blowout, Deer Camp, and Hilltop pits would remain in reclamation status.

A detailed description of open pits and pit parameters within the existing Casino/Winrock PoO boundary are presented within the *Casino/Winrock Mine Plan Amendment* (NVN-068521) (BLM 2009b).

Existing/Authorized Rock Disposal Areas

Under the No Action Alternative, two existing/authorized and reclaimed RDAs (i.e., Casino RDA and Winrock RDA) would remain inactive and in reclamation status within the existing Casino/Winrock Mine PoO boundary.

A detailed description of RDA construction and waste rock management specifications within the existing Casino/Winrock PoO boundary are presented within the *Casino/Winrock Mine Plan Amendment* (NVN-068521) (BLM 2009b).

Existing/Authorized Heap Leach Facilities and Ore Process Areas

Under the No Action Alternative, one existing/authorized and reclaimed HLF (i.e., Winrock HLF) and one process area (i.e., Winrock Process Area) would remain inactive and in reclamation status within the existing Casino/Winrock Mine PoO boundary.

A detailed description of design and operation parameters for existing/authorized HLFs and associated support facilities within the existing Casino/Winrock PoO boundary are presented within the *Casino/Winrock Mine Plan Amendment* (NVN-068521) (BLM 2009b).

Existing/Authorized Interpit Areas, Access Roads, and Haul Roads

Under the No Action Alternative, the existing/authorized haul roads would remain in reclamation status, but would remain active in support of the monitoring phase of the closure plan. A detailed description of interpit areas, access roads, and haul roads are presented within the *Casino/Winrock Mine Plan Amendment* (NVN-068521) (BLM 2009b).

Existing/Authorized Ancillary and Support Facilities

Under the No Action Alternative, the existing/authorized ancillary and support facilities would remain in closure status, with the exception of monitoring wells used in support of the monitoring phase of the closure plan. Existing/authorized ancillary and support facilities include the following: GMSs, borrow pits, transmission lines and substations, communication sites, water line corridors, fences, ancillary areas, yards, and buildings. A detailed description of ancillary and support facilities is presented within the *Casino/Winrock Mine Plan Amendment* (NVN-068521) (BLM 2009b).

Existing/Authorized Exploration

Under the No Action Alternative, exploration activities would continue in accordance with the regional exploration PoO (NVN-078825), existing plan amendments, and the *Casino/Winrock Mine Plan Amendment* (NVN-068521) (BLM 2009b). Current approvals for the NOA are summarized in **Table 2.2-1**.

2.3.1.5 White Pine Mine

The following section summarizes the reclaimed facilities within the existing White Pine Mine area as shown in **Figure 2.3-1** and described in **Table 2.3-1**.

Existing/Authorized Open Pits

Under the No Action Alternative, the four open pits (i.e., White Pine Pits 1, 2, 3, and 4) associated with the existing White Pine Mine would remain in closure status.

Existing/Authorized Rock Disposal Areas

Under the No Action Alternative, the four RDAs (i.e., White Pine NE RDA; White Pine NW RDA; White Pine West RDA; and White Pine East RDA) associated with the existing White Pine Mine would remain fully reclaimed, with all permit requirements fulfilled.

Existing/Authorized Heap Leach Facilities and Ore Process Areas

Under the No Action Alternative, the White Pine HLF and White Pine Process Area associated with the existing White Pine Mine would remain fully reclaimed, with all permit requirements fulfilled.

Existing/Authorized Interpit Areas, Access Roads, and Haul Roads

Under the No Action Alternative, the haul roads and ancillary facilities associated with the existing White Pine Mine would remain fully reclaimed, with all permit requirements fulfilled.

Existing/Authorized Ancillary and Support Facilities

Under the No Action Alternative, the ancillary and support facilities associated with the existing White Pine Mine would remain fully reclaimed, with all permit requirements fulfilled.

Existing/Authorized Exploration

Under the No Action Alternative, exploration activities would continue in accordance with BMM's Regional Exploration PoO (NVN-078825). Current approvals for the NOA are summarized in **Table 2.2-1**.

2.3.2 South Operations Area

Under the No Action Alternative, the facilities within the SOA would consist of existing/authorized and reclaimed mine facilities within the Alligator Ridge Mine (NVN-068655) and the Yankee Mine (NVN-068259) PoO boundaries. The existing Alligator Ridge Mine PoO boundary encompasses approximately 1,740 acres and the existing Yankee Mine PoO boundary encompasses approximately 3,562 acres for a total of 5,302 acres. Both mines would remain in reclamation and closure under the control of Barrick. Previous BLM approvals have authorized a total of approximately 960 acres of surface disturbance within the existing SOA, of which 594 acres (62 percent) have been fully reclaimed and have met permit requirements. An additional 297 acres (31 percent) of surface disturbance within the SOA has been partially reclaimed; however, reclamation remains in progress (**Table 2.3-2**).

2.3.2.1 Land Ownership and Mining Claims

Figure 2.3-5 illustrates the surface ownership within the NOA and SOA boundaries. Under the No Action Alternative, the existing Alligator Ridge Mine and Yankee Mine PoO boundaries would remain the same, encompassing a total of 5,302 acres of BLM-administered lands.

2.3.2.2 Schedule and Work Force

Under the No Action Alternative, limited exploration and post-closure monitoring at the existing Yankee HLF would continue until the facility bond is released by the NDEP and BLM. Barrick currently utilizes the existing work force for exploration and monitoring activities conducted within the existing Alligator Ridge and Yankee Mine areas. This situation would continue under the No Action Alternative and no additional workers or contractors would be required.

2.3.2.3 Alligator Ridge Mine

The following section summarizes the reclaimed facilities within the existing Alligator Ridge Mine PoO boundary as shown in **Figure 2.3-2** and described in **Table 2.3-2**.

Existing/Authorized Open Pits

Under the No Action Alternative, 11 existing/authorized open pits (i.e., Arm Pit; Luxe [including Luxe Pits B, C, D, G]); Luxe Saddle Pit; and Vantage [including Vantage Pit O, Vantage Pit I, IB, Vantage Pit II, III) would remain in closure and reclamation status pursuant to the Alligator Ridge Mine Reclamation Permit #0013 (NDEP 2008) within the existing Alligator Ridge Mine PoO boundary.

Existing/Authorized Rock Disposal Areas

Under the No Action Alternative, eight existing/authorized RDAs (i.e., North RDA V; Luxe RDA VII; Luxe Saddle RDA IV and VII; Vantage RDA IV; and South RDA I, II, and III) would remain in closure and reclamation status pursuant to the Alligator Ridge Mine Reclamation Permit #0013 (NDEP 2008) within the existing Alligator Ridge Mine PoO boundary.

Existing/Authorized Heap Leach Facilities and Ore Process Areas

Under the No Action Alternative, six existing/authorized HLFs (i.e., Vantage HLF [including AA, BCDE, FGHI, JKL], Low Grade Leach Pad, and Phase II HLFs); one existing/authorized tailings area; and the Vantage Process Area would remain in closure and reclamation status pursuant to the Alligator Ridge Mine Reclamation Permit #0013 (NDEP 2008) within the existing Alligator Ridge Mine PoO boundary.

Existing/Authorized Interpit Areas, Access Roads, and Haul Roads

Under the No Action Alternative, existing access roads would continue to be maintained to support reclamation and monitoring activities. The existing/authorized haul roads and interpit areas would remain in closure and reclamation status pursuant to the Alligator Ridge Mine Reclamation Permit #0013 (NDEP 2008) within the existing Alligator Ridge Mine PoO boundary.

Existing/Authorized Ancillary and Support Facilities

Under the No Action Alternative, facilities at the existing Alligator Ridge Mine which have not been fully reclaimed or removed include approximately 42,600 feet of four-strand barbed wire fencing, water well (P-2), and monitoring well (MP-10). Under the No Action Alternative, these facilities would remain in place to support reclamation, monitoring, and exploration activities. All other existing/authorized ancillary and support facilities would remain in closure and reclamation status pursuant to the Alligator Ridge Mine Reclamation Permit #0013 (NDEP 2008).

Existing/Authorized Exploration

Under the No Action Alternative, facilities at the existing Alligator Ridge Mine, which have not been fully reclaimed or removed, would remain in place to support reclamation, monitoring, and exploration activities. All other facilities would remain in closure and reclamation status pursuant to the Alligator Ridge Mine Reclamation Permit #0013 (NDEP 2008).

Under the No Action Alternative, exploration activities within and around the existing Alligator Ridge Mine PoO boundary would continue as authorized by the 2008 Alligator Ridge Mine PoO Amendment (NV-043-08-002) and the regional exploration PoO (NVN-078825). Current approvals for the existing SOA are summarized in **Table 2.2-2**.

2.3.2.4 Yankee Mine

The following section summarizes the existing/authorized and reclaimed facilities within the existing Yankee Mine PoO boundary as shown in **Figure 2.3-2** and described in **Table 2.3-2**.

Existing/Authorized Open Pits

Under the No Action Alternative, 18 existing/authorized open pits (i.e., Blue Pit; Blue Extension Pit; Gray Pit; Lee Pit; Lincoln Pit; Grant Pit; Monitor Pit; Olustee Pit: Olustee Extension Pit; West Davis Pit; East Davis Pit; Vicksburg Pit; Yankee Pit; SW-Ext Pit; Saddle Pit; East/West Spur Pit; West Crusher Pit; and East Crusher Pit) would remain in closure and reclamation status pursuant to the Yankee Mine Reclamation Permit #0033 (NDEP 2009) within the Yankee Mine PoO boundary. With the exception of the Olustee and West Crusher pits, the remaining 16 pits have been partially backfilled with carbonate-rich material. The Blue, Blue Extension, and Gray pits were backfilled with carbonate-rich material and covered by the Blue/Gray RDA.

Existing/Authorized Rock Disposal Areas

Under the No Action Alternative, three existing/authorized RDAs (i.e., North RDA, Blue/Gray RDA, and Yankee North RDA) would remain in closure and reclamation status pursuant to the Yankee Mine Reclamation Permit #0033 (NDEP 2009) within the existing Yankee Mine PoO boundary.

Existing/Authorized Heap Leach Facilities and Ore Process Areas

Under the No Action Alternative, one existing/authorized HLF (i.e., Yankee HLF) and one ore process area (i.e., Yankee Process Area) would remain in closure and reclamation status pursuant to the Alligator Ridge Mine Reclamation Permit #0013 (NDEP 2008) and Yankee Mine Reclamation Permit #0033 (NDEP 2009) within the existing Yankee Mine PoO boundary.

Existing/Authorized Interpit Areas, Access Roads, and Haul Roads

Under the No Action Alternative, existing access roads would continue to be maintained to support reclamation and monitoring activities. The existing/authorized haul roads and interpit areas would remain in closure and reclamation status pursuant to the Yankee Mine Reclamation Permit #0033 (NDEP 2009) within the existing Yankee Mine PoO boundary.

Existing/Authorized Ancillary and Support Facilities

Under the No Action Alternative, all existing/authorized ancillary and support facilities would remain in closure and reclamation status pursuant to the Yankee Mine Reclamation Permit #0033 (NDEP 2009) within the existing Yankee Mine PoO boundary. Pursuant to the Integrated Water Monitoring and Management Plan, five monitoring wells are permitted to be installed within the SOA.

Existing/Authorized Exploration

Under the No Action Alternative, exploration activities within and around the existing Yankee Mine PoO boundary would continue as authorized by the 2008 Yankee Exploration Project Decision Record (N46-84-024P) and the regional exploration PoO (NVN-078825). Current approvals for the existing SOA are summarized in **Table 2.2-2**.

2.4 Proposed Action

The Proposed Action would include the expansion of existing facilities and the development of new facilities within the proposed NOA and SOA projects. The two operating areas would be connected by a TUC.

Figures 2.4-1 and **2.4-2** illustrate the existing and proposed new disturbances and life-of-mine (full build-out), respectively, for the proposed NOA project and the northernmost portion of the TUC.

Figures 2.4-3 and **2.4-4** illustrate the existing/authorized and proposed new disturbances and life-of-mine (full build-out), respectively, for the proposed SOA project and the southern portion of the TUC.

Tables 2.4-1 and **2.4-2** summarize the existing/authorized and proposed surface disturbances under the Proposed Action for the proposed NOA and SOA projects, respectively.

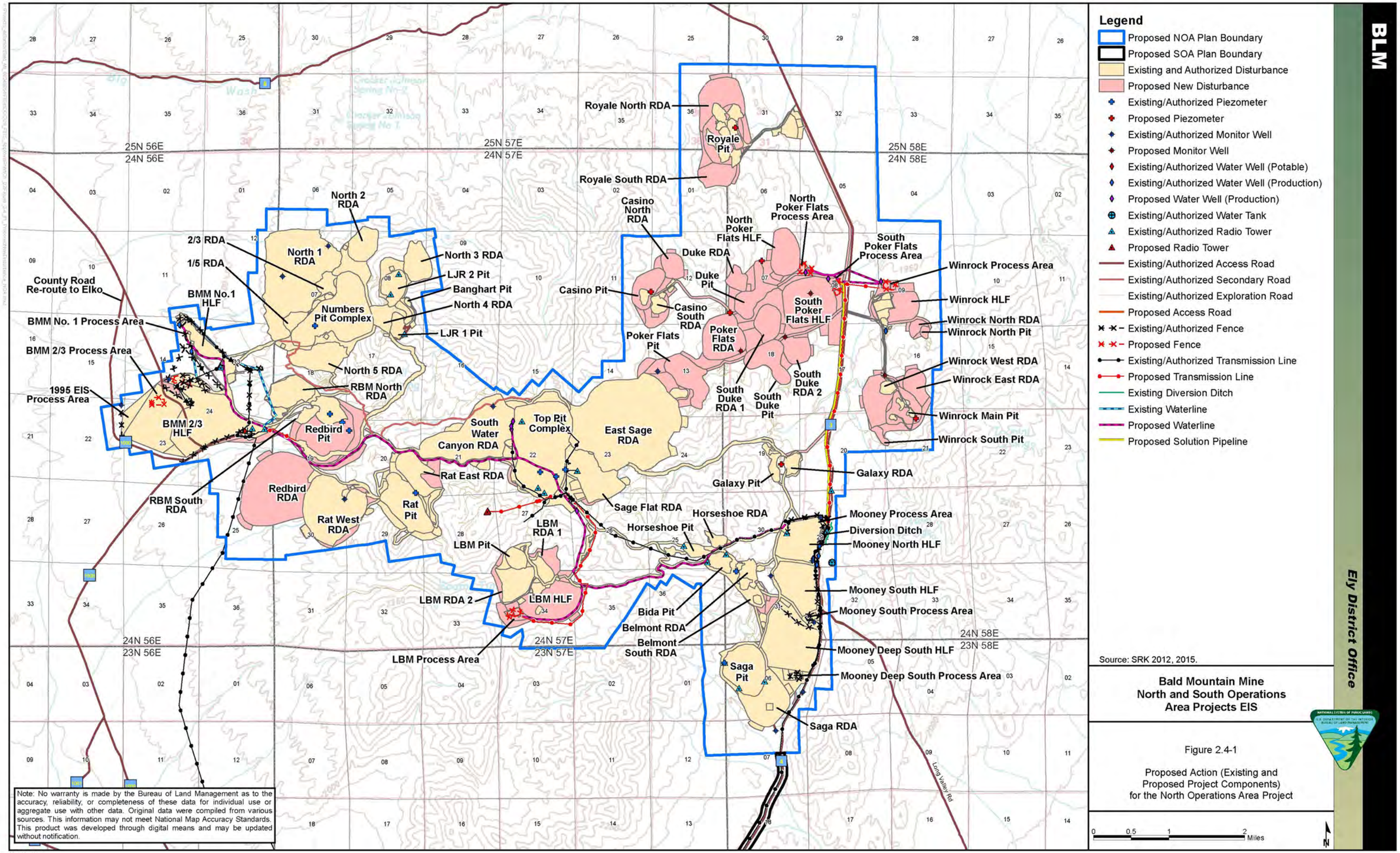
For permitting purposes, the proposed disturbances encompass sufficient area to accommodate the proposed expansion and development as well as potential variations resulting from design modifications, such as engineering adjustments to the open pit perimeter, storm water controls and diversion ditches, haul/access road realignments, and GMSs.

2.4.1 North Operations Area Project

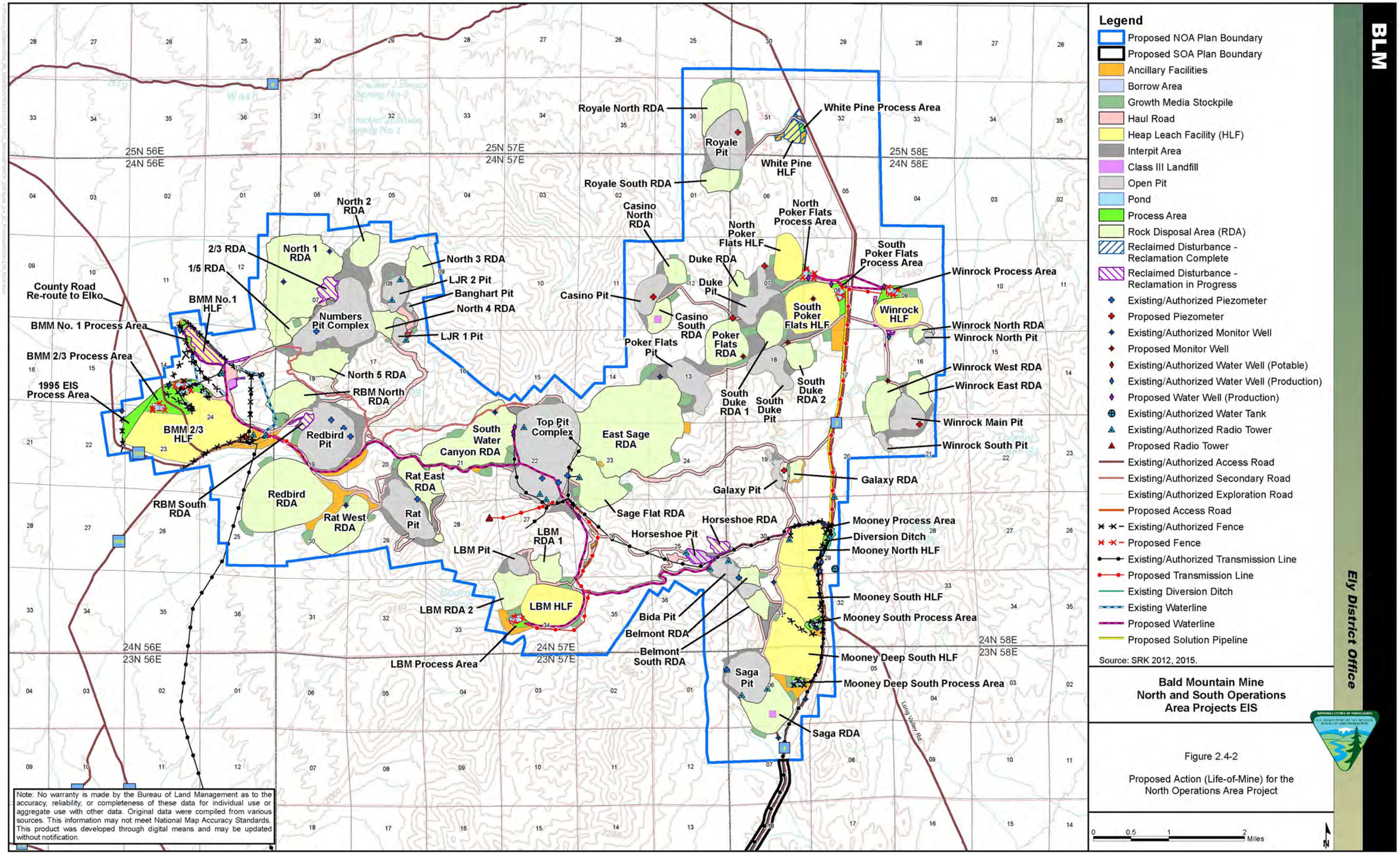
Under the Proposed Action, Barrick would combine and expand the existing BMM NOA PoO boundary and the Casino/Winrock Mine PoO boundaries into a unified PoO boundary called the proposed NOA project. The proposed NOA project PoO boundary would encompass approximately 31,085 acres for a net increase of 12,576 acres from the existing BMM NOA and Casino/Winrock PoO boundaries. The proposed surface acreage disturbances within the NOA project PoO boundary encompass approximately 4,357 acres as outlined in **Table 2.4-1**.

Proposed activities within the proposed NOA project would include:

- Modification of six existing open pits and development of five new open pits;
- Modification of 13 existing RDAs and development of 7 new RDAs;
- Modification of 3 existing HLFs and one associated process facility, and development of two new HLFs and four associated process facilities;
- Modification of existing support facilities and development of new support facilities;
- Removal of previously authorized underground operations in the Top Pit Complex (an administrative action);
- Modification of the Regional Exploration PoO (NVN-078825) boundary to remove overlap with the proposed NOA project boundary; and
- Continuation of exploration drilling activities within the proposed NOA project boundary.


Legend
Proposed NOA Plan Boundary
Proposed SOA Plan Boundary
Existing and Authorized Disturbance
Proposed New Disturbance
Existing/Authorized Piezometer
Proposed Piezometer
Existing/Authorized Monitor Well
Proposed Monitor Well
Existing/Authorized Water Well (Potable)
Existing/Authorized Water Well (Production)
Proposed Water Well (Production)
Existing/Authorized Water Tank
Existing/Authorized Radio Tower
Proposed Radio Tower
Existing/Authorized Access Road
Existing/Authorized Secondary Road
Existing/Authorized Exploration Road
Proposed Access Road
Existing/Authorized Fence
Proposed Fence
Existing/Authorized Transmission Line
Proposed Transmission Line
Existing Diversion Ditch
Existing Waterline
Proposed Waterline
Proposed Solution Pipeline
Royale North RDA
Royale Pit
Royale South RDA
North 2 RDA
North 1 RDA
2/3 RDA
1/5 RDA
North 3 RDA
LJR 2 Pit
Banghart Pit
North 4 RDA
LJR 1 Pit
Numbers Pit Complex
County Road Re-route to Elko
BMM No.1 HLF
BMM No. 1 Process Area
BMM 2/3 Process Area
1995 EIS Process Area
BMM 2/3 HLF
North 5 RDA
RBM North RDA
Redbird Pit
Redbird RDA
RBM South RDA
Rat West RDA
Rat Pit
Rat East RDA
South Water Canyon RDA
Top Pit Complex
East Sage RDA
Sage Flat RDA
LBM RDA 1
LBM Pit
LBM RDA 2
LBM HLF
LBM Process Area
Casino North RDA
Casino Pit
Casino South RDA
Duke RDA
Duke Pit
North Poker Flats HLF
North Poker Flats Process Area
South Poker Flats Process Area
South Poker Flats HLF
Poker Flats Pit
Poker Flats RDA
South Duke RDA 1
South Duke Pit
South Duke RDA 2
Winrock Process Area
Winrock HLF
Winrock North RDA
Winrock North Pit
Winrock West RDA
Winrock East RDA
Winrock Main Pit
Winrock South Pit
Galaxy Pit
Galaxy RDA
Horseshoe RDA
Horseshoe Pit
Mooney Process Area
Diversion Ditch
Mooney North HLF
Mooney South HLF
Mooney South Process Area
Bida Pit
Belmont RDA
Belmont South RDA
Mooney Deep South HLF
Mooney Deep South Process Area
Saga Pit
Saga RDA
25N 56E
24N 56E
25N 57E
24N 57E
25N 58E
24N 58E
24N 56E
23N 56E
24N 57E
23N 57E
24N 58E
23N 58E
Long Valley Rd
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.
Source: SRK 2012, 2015.
Bald Mountain Mine
North and South Operations
Area Projects EIS
Figure 2.4-1
Proposed Action (Existing and Proposed Project Components) for the North Operations Area Project
0 0.5 1 2 Miles
N
BLM
Ely District Office

2/10/2016


Legend
Proposed NOA Plan Boundary
Proposed SOA Plan Boundary
Ancillary Facilities
Borrow Area
Growth Media Stockpile
Haul Road
Heap Leach Facility (HLF)
Interpit Area
Class III Landfill
Open Pit
Pond
Process Area
Rock Disposal Area (RDA)
Reclaimed Disturbance - Reclamation Complete
Reclaimed Disturbance - Reclamation in Progress
Existing/Authorized Piezometer
Proposed Piezometer
Existing/Authorized Monitor Well
Proposed Monitor Well
Existing/Authorized Water Well (Potable)
Existing/Authorized Water Well (Production)
Proposed Water Well (Production)
Existing/Authorized Water Tank
Existing/Authorized Radio Tower
Proposed Radio Tower
Existing/Authorized Access Road
Existing/Authorized Secondary Road
Existing/Authorized Exploration Road
Proposed Access Road
Existing/Authorized Fence
Proposed Fence
Existing/Authorized Transmission Line
Proposed Transmission Line
Existing Diversion Ditch
Existing Waterline
Proposed Waterline
Proposed Solution Pipeline
Source: SRK 2012, 2015.
Bald Mountain Mine
North and South Operations
Area Projects EIS
Figure 2.4-2
Proposed Action (Life-of-Mine) for the North Operations Area Project
0 0.5 1 2 Miles
N
BLM
Ely District Office
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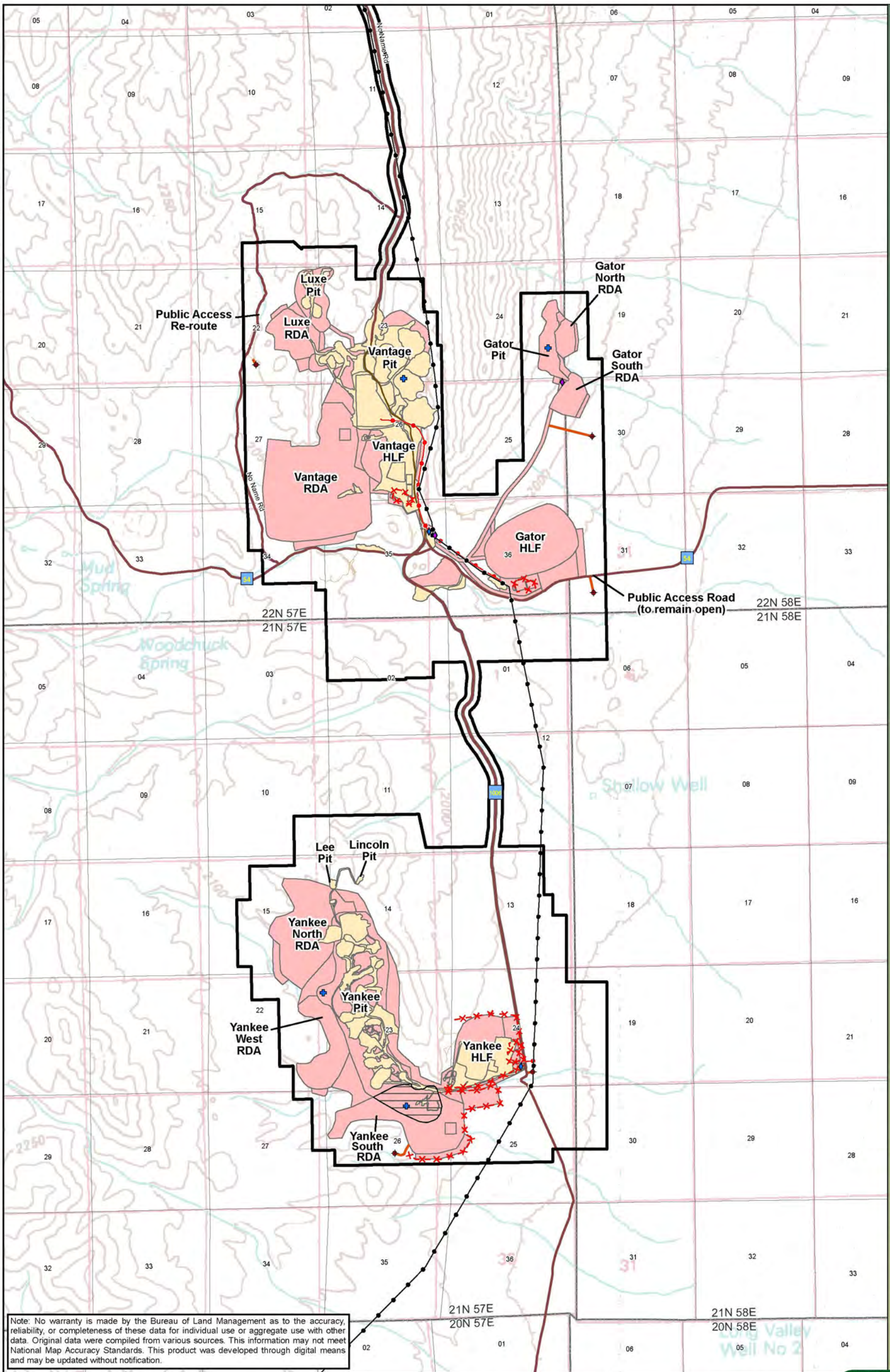
25N 56E
24N 56E
25N 57E
24N 57E
25N 58E
24N 58E
24N 56E
23N 56E
24N 57E
23N 57E
24N 58E
23N 58E
Royale North RDA
Royale Pit
White Pine Process Area
White Pine HLF
Royale South RDA
North 2 RDA
North 1 RDA
2/3 RDA
1/5 RDA
County Road Re-route to Elko
BMM No.1 HLF
BMM No. 1 Process Area
BMM 2/3 Process Area
1995 EIS Process Area
BMM 2/3 HLF
Numbers Pit Complex
North 3 RDA
LJR 2 Pit
Banghart Pit
North 4 RDA
LJR 1 Pit
North 5 RDA
RBM North RDA
Redbird Pit
Redbird RDA
RBM South RDA
Rat West RDA
Rat East RDA
Rat Pit
South Water Canyon RDA
Top Pit Complex
East Sage RDA
Casino North RDA
Casino Pit
Casino South RDA
Duke RDA
Duke Pit
North Poker Flats HLF
North Poker Flats Process Area
South Poker Flats Process Area
South Poker Flats HLF
Winrock Process Area
Winrock HLF
Winrock North RDA
Winrock North Pit
Winrock West RDA
Winrock East RDA
Winrock Main Pit
Winrock South Pit
Poker Flats Pit
Poker Flats RDA
South Duke RDA 1
South Duke Pit
South Duke RDA 2
Galaxy RDA
Galaxy Pit
Sage Flat RDA
Horseshoe RDA
Horseshoe Pit
Mooney Process Area
Diversion Ditch
Mooney North HLF
Mooney South HLF
Mooney South Process Area
Mooney Deep South HLF
Mooney Deep South Process Area
LBM Pit
LBM RDA 1
LBM HLF
LBM RDA 2
LBM Process Area
Bida Pit
Belmont RDA
Belmont South RDA
Saga Pit
Saga RDA
Long Valley Rd

4/4/2016



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Legend

- Proposed SOA Plan Boundary
- Existing and Authorized Disturbance
- Proposed New Disturbance
- Pit and RDA
- Existing/Authorized Piezometer
- Proposed Monitor Well
- Existing/Authorized Water Well (Production)
- Proposed Water Well (Production)
- Existing/Authorized Access Road
- Proposed Access Road
- Proposed Fence
- Existing/Authorized Transmission Line
- Proposed Transmission Line

Bald Mountain Mine North and South Operations Area Projects EIS

Figure 2.4-3

Proposed Action (Existing and Proposed Project Components) for the South Operations Area Project

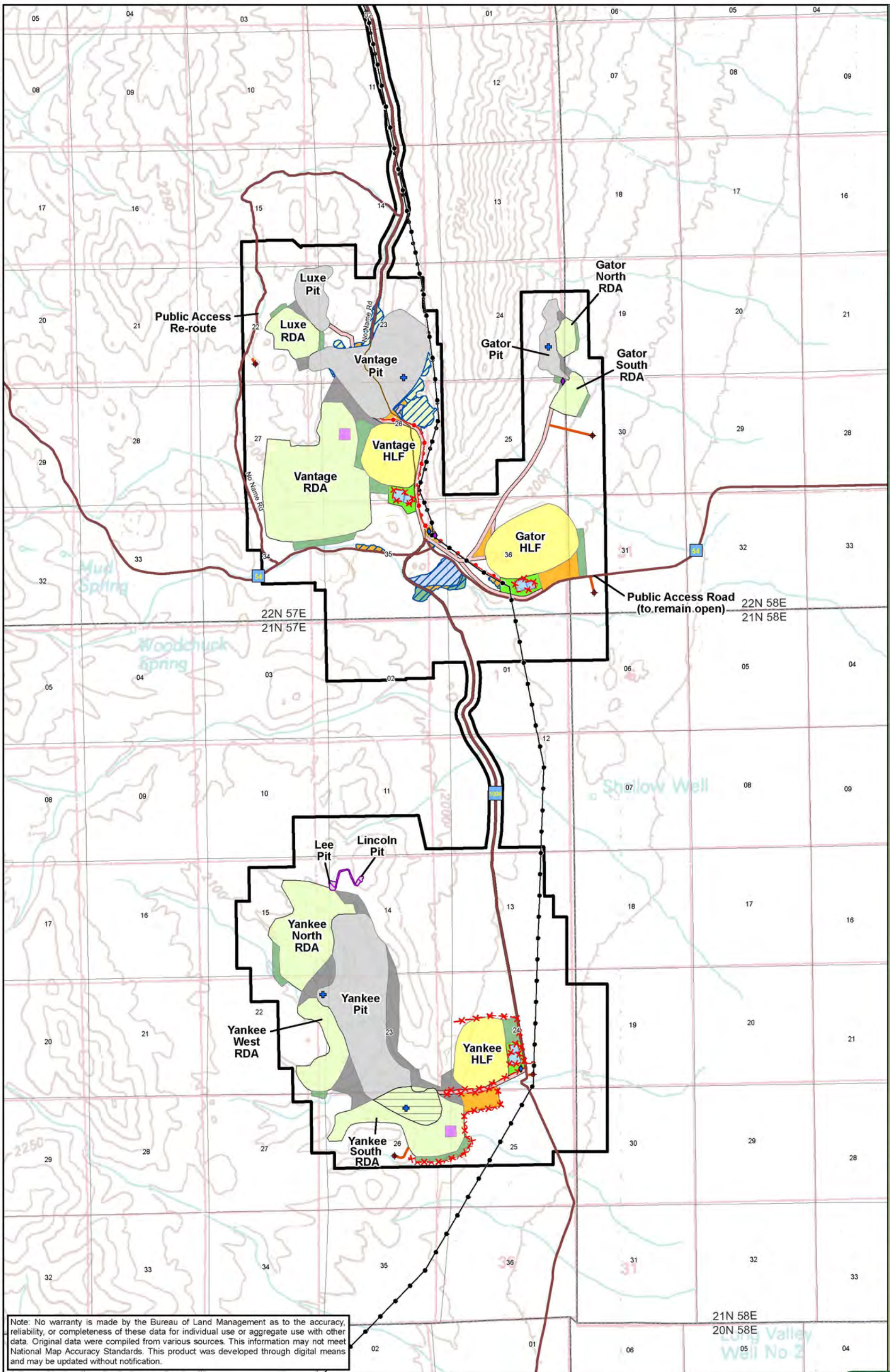
0 0.25 0.5 1 Miles

Source: SRK 2012, 2015.

2/10/2016

BLM

Ely District Office



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Legend

- Proposed SOA Plan Boundary
- Ancillary Facilities
- Growth Media Stockpile
- Haul Road
- Heap Leach Facility (HLF)
- Interpit Area
- Class III Landfill
- Open Pit
- Pond
- Process Area
- Rock Disposal Area (RDA)
- Tailings
- Pit and RDA
- Reclaimed Disturbance - Reclamation Complete
- Reclaimed Disturbance - Reclamation in Progress
- Existing/Authorized Piezometer
- Proposed Monitor Well
- Existing/Authorized Water Well (Production)
- Proposed Water Well (Production)
- Existing/Authorized Access Road
- Existing/Authorized Exploration Road
- Proposed Access Road
- Proposed Fence
- Existing/Authorized Transmission Line
- Proposed Transmission Line

Source: SRK 2012, 2015.
2/10/2016

Bald Mountain Mine North and South Operations Area Projects EIS

Figure 2.4-4

Proposed Action (Life-of-Mine) for the South Operations Area Project

0 0.25 0.5 1 Miles

BLM

Ely District Office

Table 2.4-1 Proposed Action – Proposed Surface Disturbance within the North Operations Area Project

Project Component	Existing/Authorized and Reclaimed Surface Disturbance[7] (acres)	Proposed Action Surface Disturbance (acres)	Total Surface Disturbance (acres)
Numbers Area			
Proposed Open Pits			
Banghart Pit[1]	5	0	5
LJR 1 Pit (North 3)	35	1	36
LJR 2 Pit (North 2)	75	0	75
Numbers Pit Complex (North 1)	377	0	377
Proposed Rock Disposal Areas			
1/5 RDA	33	0	33
2/3 RDA[2]	38	0	38
North 1 RDA	607	0	607
North 2 RDA	90	0	90
North 3 RDA	97	0	97
North 4 RDA	60	0	60
North 5 RDA	141	0	141
Proposed Heap Leach Facilities and Ore Process Areas			
1995 EIS Process Area	46	0	46
BMM No. 1 HLF[2]	65	0	65
BMM No. 1 Process Area	27	0	27
BMM 2/3 HLF Expansion	560	0	560
BMM 2/3 Process Area	128	22	150
Numbers Area Subtotal	**2,386**	**23**	**2,409**
Redbird and Rat Areas			
Proposed Open Pits			
Rat Pit	195	0	195
Redbird Pit (RBM)	110	196	306
Proposed Rock Disposal Areas			
Rat East RDA	125	39	164
Rat West RDA	198	23	221
RBM North RDA	128	5	133

Table 2.4-1 Proposed Action – Proposed Surface Disturbance within the North Operations Area Project

Project Component	Existing/Authorized and Reclaimed Surface Disturbance[7] (acres)	Proposed Action Surface Disturbance (acres)	Total Surface Disturbance (acres)
RBM South RDA[2]	20	0	20
Redbird RDA	90	457	547
Redbird and Rat Areas Subtotal	**867**	**720**	**1,586**
Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon Areas			
Proposed Open Pits			
Duke Pit	0	105	105
Poker Flats Pit	0	142	142
South Duke Pit	0	123	123
Top Pit Complex (Top/Sage Flat)	593	9	602
Proposed Rock Disposal Areas			
Duke RDA	0	42	42
East Sage RDA	880	30	910
Poker Flats RDA	0	179	179
Sage Flat RDA	207	7	214
South Duke RDA 1	0	85	85
South Duke RDA 2	0	73	73
South Water Canyon RDA	462	0	462
Proposed Heap Leach Facilities and Ore Process Areas			
North Poker Flats HLF	0	128	128
North Poker Flats Process Area	0	14	14
South Poker Flats HLF	0	252	252
South Poker Flats Process Area	0	32	32
Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon Areas Subtotal	**2,143**	**1,219**	**3,362**

Table 2.4-1 Proposed Action – Proposed Surface Disturbance within the North Operations Area Project

Project Component	Existing/Authorized and Reclaimed Surface Disturbance[7] (acres)	Proposed Action Surface Disturbance (acres)	Total Surface Disturbance (acres)
Winrock Area			
Proposed Open Pits			
Winrock Main Pit[2] (Deer Camp, Hilltop, and Blowout pits)	23	83	106
Winrock North Pit	0	10	10
Winrock South Pit	0	17	17
Proposed Rock Disposal Areas			
Winrock East RDA	0	69	69
Winrock North RDA	0	23	23
Winrock West RDA[2]	24	116	140
Proposed Heap Leach Facilities and Ore Process Areas			
Winrock HLF[2]	48	93	142
Winrock Process Area	0	30	30
Winrock Area Subtotal	**95**	**442**	**537**
Little Bald Mountain Area			
Proposed Open Pits			
LBM Pit	41	0	41
Proposed Rock Disposal Areas			
LBM RDA 1	32	42	75
LBM RDA 2	103	18	120
Proposed Heap Leach Facilities and Ore Process Areas			
LBM HLF	60[5]	179	238
LBM Process Area	0	23	23
Little Bald Mountain Area Subtotal	**236**	**261**	**497**
Royale Area			
Proposed Open Pits			
Royale Pit (White Pine Pits 1, 2, 3, 4)	126[5]	92	219

Table 2.4-1 Proposed Action – Proposed Surface Disturbance within the North Operations Area Project

Project Component	Existing/Authorized and Reclaimed Surface Disturbance[7] (acres)	Proposed Action Surface Disturbance (acres)	Total Surface Disturbance (acres)
Proposed Rock Disposal Areas			
Royale North RDA	12[5]	150	162
Royale South RDA	1[5]	84	85
Royale Area Subtotal	**139**	**327**	**466**
Casino Area			
Proposed Open Pits			
Casino Pit[2] (Keno Pit)	15	84	99
Proposed Rock Disposal Areas			
Casino North RDA	0	55	55
Casino South RDA[2]	29	41	69
Casino Area Subtotal	**44**	**180**	**224**
Mooney Basin and Galaxy Areas			
Proposed Open Pits			
Bida Pit	89	1	90
Galaxy Pit	31	0	31
Horseshoe Pit[2]	33	0	33
Saga Pit	196	0	196
Proposed Rock Disposal Areas			
Belmont RDA	36	0	36
Belmont South RDA	40	9	49
Galaxy RDA[2]	30	0	30
Horseshoe RDA[2]	25	0	25
Saga RDA	183	0	183
Proposed Heap Leach Facilities and Ore Process Areas			
Mooney North, South, and Deep South HLFs	693	0	693
Mooney Process Areas	55	0	55
Mooney Basin and Galaxy Areas Subtotal	**1,412**	**10**	**1,422**

Table 2.4-1 Proposed Action – Proposed Surface Disturbance within the North Operations Area Project

Project Component	Existing/Authorized and Reclaimed Surface Disturbance[7] (acres)	Proposed Action Surface Disturbance (acres)	Total Surface Disturbance (acres)
Proposed Interpit Areas and Haul Roads			
Interpit Areas	507	472	979
Haul Roads[6]	688	267	955
Proposed Interpit Areas and Haul Roads Subtotal	**1,195**	**739**	**1,934**
Proposed Ancillary and Support Facilities			
Access Roads	9	0	9
Ancillary Facilities[3]	243	163	406
Communication Sites	0	1	1
GMSs	131	230	361
Piezometer and Monitoring Well Sites	1	0	1
Radio Tower	0	5	5
Transmission Line Corridors	5	20	25
Water Line	0	7	7
Solution Line	0	11	11
Proposed Ancillary and Support Facilities Subtotal	**389**	**437**	**826**
Exploration	**475**	**0**	**475**
Total[4]	**9,381**	**4,357**	**13,739**

[1] The Banghart Pit was included above due to its presence within the NOA; however, this facility was not discussed within the NOA PoO (Barrick 2012a). Barrick is not required to reclaim this facility.

[2] Former mining facility which has not received BLM or state agency approval for completion of reclamation work, but Barrick is in the process of completing the reclamation requirements.

[3] Ancillary facility calculations include the footprint values associated with the landfill, office area, and reclaimed borrow area.

[4] Totals may vary due to rounding.

[5] Former mining facility which has received BLM or state agency written approval for completion of reclamation work.

[6] There are an additional 11 acres of authorized haul roads that are being withdrawn from the Proposed Action and not included in this table.

[7] Due to some of the facility modifications/redesign the acreages in the existing/authorized column/reclaimed column do not directly correlate to the disturbance acres in **Table 2.3-1**, existing/authorized surface disturbance acreages column.

Source: Barrick 2015, 2012a.

Table 2.4-2 Proposed Action – Proposed Surface Disturbance within the South Operations Area Project

Project Component	Existing/Authorized Surface Disturbance (acres)[6]	Proposed Action Surface Disturbance (acres)	Total Surface Disturbance (acres)
Vantage and Luxe Areas			
Proposed Open Pits			
Luxe Pit	31	47	78
Vantage Pit	262	58	321
Proposed Rock Disposal Areas			
Luxe RDA	3	81	84
Vantage RDA	6	498	504
Proposed Heap Leach Facilities and Ore Process Areas Subtotal			
Vantage HLF	97	45	142
Vantage Process Area	20	6	26
Vantage and Luxe Areas Subtotal	**420**	**735**	**1,155**
Gator Area			
Proposed Open Pits			
Gator Pit	0	56	56
Proposed Rock Disposal Areas			
Gator North RDA	0	29	29
Gator South RDA	0	47	47
Proposed Heap Leach Facilities and Ore Process Areas Subtotal			
Gator HLF	0	229	229
Gator Process Area	2	29	31
Gator Subtotal	**2**	**390**	**392**
Yankee Area			
Proposed Open Pits			
Lee Pit[1]	3	0	3
Lincoln Pit[1]	2	0	2
Yankee Pit[2]	226	186	412
Proposed Rock Disposal Areas			
Yankee North RDA	10	232	241
Yankee South RDA	7	239	246
Yankee West RDA	0	116	116

Table 2.4-2 Proposed Action – Proposed Surface Disturbance within the South Operations Area Project

Project Component	Existing/Authorized Surface Disturbance (acres)[6]	Proposed Action Surface Disturbance (acres)	Total Surface Disturbance (acres)
Proposed Heap Leach Facilities and Ore Process Areas Subtotal			
Yankee HLF	88	62	150
Yankee Process Area	10	12	21
Yankee Area Subtotal	**346**	**846**	**1,192**
Proposed Interpit Areas and Haul Roads			
Interpit Areas	29	206	235
Haul Roads	27	266	294
Proposed Interpit Areas and Haul Roads Subtotal	**57**	**472**	**528**
Proposed Ancillary and Support Facilities			
Access Roads	1	0	1
Ancillary Facilities[3]	7	75	83
Communication Sites	0	5	5
GMSs[4]	12	124	135
Monitoring Wells	0	1	1
Transmission Line Corridors	0	2	2
Proposed Ancillary and Support Facilities Subtotal	**20**	**207**	**227**
Exploration	**69**	**90**	**159**
Total[5]	**913**	**2,740**	**3,653**

[1] Project component which has not received BLM or state agency approval for completion of reclamation work, but Barrick is in the process of completing the reclamation requirements.

[2] The proposed Yankee Pit would total 489.6 acres; however, 77.5 acres would be converted to the Yankee South RDA. The overlapping disturbance footprint is included within the Yankee South RDA category.

[3] Ancillary facility calculation includes the footprint value associated with the silt pits.

[4] GMS calculation includes the footprint value associated with the reclamation stockpiles.

[5] Totals may vary due to rounding.

[6] Due to some of the facility modifications/redesign the acreages in the existing/authorized column/reclaimed column do not directly correlate to the disturbance acres in **Table 2.3-2**, existing/authorized surface disturbance acreages column.

Source: Barrick 2015, 2012b.

The proposed NOA project would increase the total approved surface disturbance from 9,381 acres to 13,739 acres, for a net increase of 4,357 acres.

2.4.1.1 Land Ownership and Mining Claims

Figure 2.4-5 illustrates the surface ownership within the proposed NOA and SOA PoO boundaries. Under the Proposed Action, the proposed NOA PoO increases to encompass 30,843 acres of BLM-administered land and 242 acres of private land.

Proposed mining and related surface disturbance would be conducted on placer claims and unpatented lode claims that are owned, leased, or controlled by Barrick on BLM-administered public lands or on private land controlled by Barrick. The property legal descriptions and claim names with BLM serial numbers are presented within Appendix A (NOA PoO) (Barrick 2012a).

2.4.1.2 Proposed Schedule and Work Force

Under the Proposed Action, the proposed NOA project would begin as early as year 1, pending permit approval. Construction-related activities would commence upon permit approval and continue through year 8. Operation-related activities would commence in mine year 2 and continue through year 21. Leach material processing would continue for approximately 3 years after mining operations cease. Concurrent reclamation would begin the first year and would be conducted throughout the operation of the mine and ore processing period as areas become available for safe and effective reclamation. Following cessation of operations, closure, and post-closure fluid monitoring would continue for a minimum of 5 years for each closed component. Reclamation monitoring would be conducted for a minimum of 3 years for each reclaimed area or until revegetation stability has been achieved. **Table 2.4-3** illustrates the proposed NOA project timeline.

Table 2.4-3 Proposed Action – Project Timeline for the North Operations Area Project[1,2]

Activity	Year													
	1	2	3	4	5	6	7	8	9 to 21	22 to 28	29 to 31	32 to 46	47 to 51	52 to 76
Construction														
Operation														
Reclamation														
Closure														
Reclamation Monitoring														
Post-Closure Monitoring[3]														

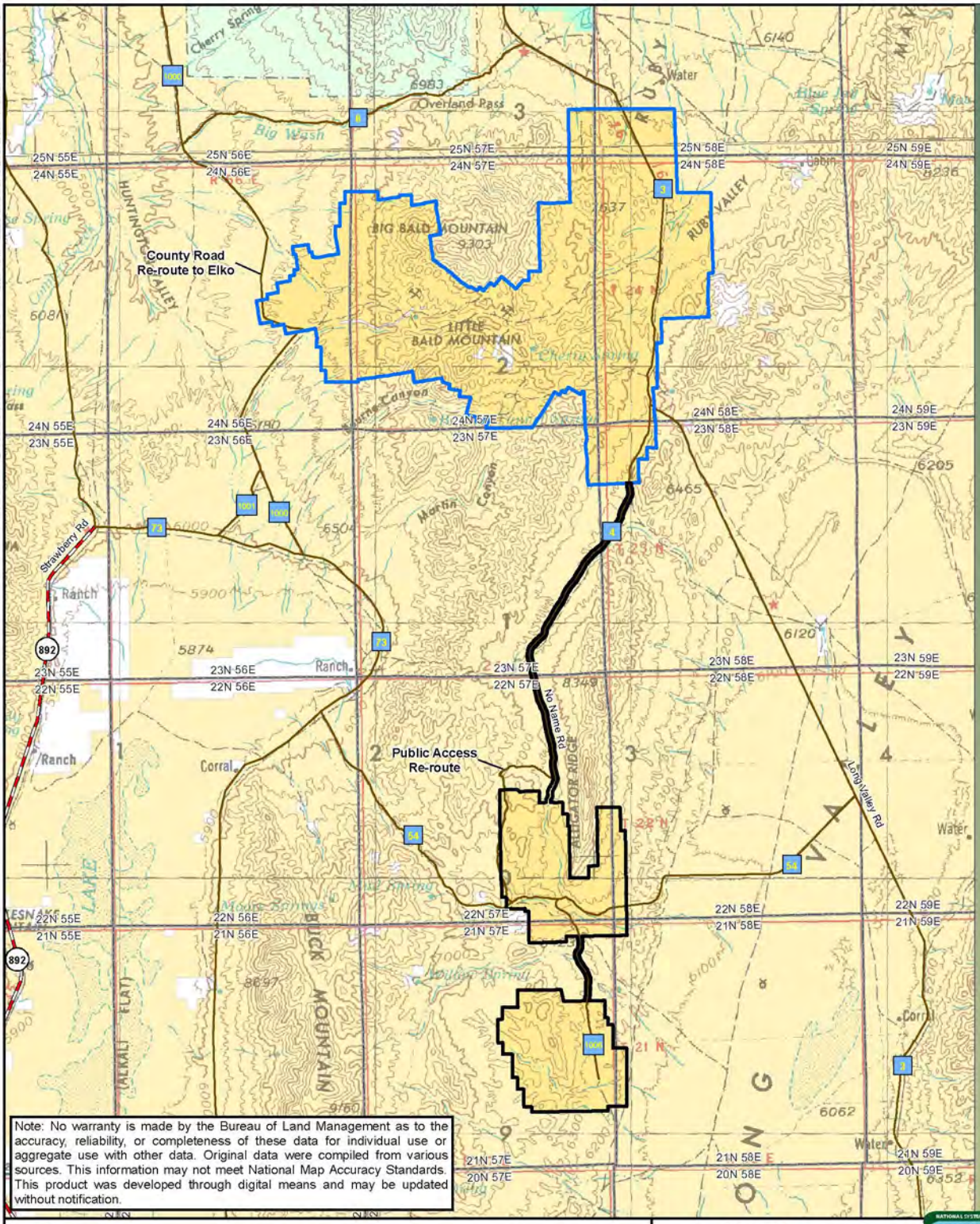
[1] Exploration activities would occur from mine year 1 through mine year 22.

[2] This schedule is conceptual and subject to changes due to mining sequences that may affect the overall plan.

[3] Post-closure monitoring would be conducted for at least 5 years, and could continue up to 30 years, following completion of heap leach processing based on current NDEP regulations. The duration of the BLM's post-closure monitoring would depend on the project's final closure plan and its implementation.

Source: Barrick 2012a.

Barrick currently employs approximately 410 full-time employees and 40 full-time contractors at the BMM. Under the Proposed Action, this level of employment would continue for the proposed NOA project.



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Legend

- Proposed NOA Plan Boundary
- Proposed SOA Plan Boundary

Land Ownership

- Bureau of Land Management
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- Private

Source: SRK 2012, BLM 2015.

Bald Mountain Mine North and South Operations Area Projects EIS

Figure 2.4-5

Proposed Action Alternative Land Ownership for the North and South Operations Area Projects

0 1 2 3 4 5 Miles

N

BLM

Ely District Office

12/16/2015

2.4.1.3 Numbers Area

The following section outlines the proposed development, alteration, and/or expansion of each facility located within the proposed Numbers Area within the proposed NOA project. In summary, Barrick proposes to amend its existing NOA PoO to conduct the following activities within the proposed Numbers Area:

- Expand the existing BMM 2/3 HLF to form the proposed BMM 2/3 Expansion HLF and develop associated solution and storm water ponds; and
- Expand existing ancillary and support facilities, as detailed below.

Figures 2.4-1 and **2.4-2** illustrate the existing/authorized and proposed new disturbances and life-of-mine (full build-out), respectively, for the proposed Numbers Area under the Proposed Action. **Table 2.4-1** summarizes the existing/authorized and proposed surface disturbances for the proposed Numbers Area under the Proposed Action.

Proposed Open Pits

No additional open pit mining is proposed within the Numbers Area. As indicated within the NOA PoO (Appendix C), the following existing/authorized facility names would be changed:

- Existing/authorized North 1 Pit to the proposed Numbers Pit Complex;
- Existing/authorized North 2 Pit to the proposed LJR 2 Pit; and
- Existing/authorized North 3 Pit to the proposed LJR 1 Pit.

Barrick would continue operations within the proposed Numbers Pit Complex, LJR 1 Pit, and LJR 2 Pit, per existing permit authorizations.

Proposed Rock Disposal Areas

No additional development, reconfiguration, and/or expansion of existing/authorized rock disposal areas are anticipated within the proposed Numbers Area.

Proposed Ore Processing Facilities

One existing HLF (i.e., BMM 2/3 HLF) would be expanded within an area previously authorized for a tailings facility and HLF expansion to form the BMM 2/3 Expansion HLF within the proposed Numbers Area.

BMM 2/3 Expansion HLF

The BMM Expansion Project EIS (BLM 1995) analyzed a new ore process facility on the east side of the existing BMM 2/3 HLF, which included milling facilities, an expanded heap leach pad, a tailings impoundment, haulage and access corridors, and other support facility disturbance. The milling facilities, expanded heap leach pad, and tailings impoundment have not been constructed and were not included in the reclamation permit or bond. A portion of this area was converted to an active HLF and associated process pond area as authorized within the Final EIS for the *Bald Mountain Mine North Operations Area Project* (BLM 2009a). Under the Proposed Action, Barrick would convert the majority of the remaining disturbance area analyzed in 1995 to the BMM 2/3 HLF Expansion and associated process area. The proposed BMM 2/3 HLF Expansion would receive leach material from the proposed Redbird Pit.

Table 2.4-4 summarizes proposed HLF height and capacity parameters within the proposed Numbers Area.

Table 2.4-4 North Operations Area Project Heap Leach Facility Design Parameters – Numbers Area[1]

Heap Leach Facility	Heap Height (ft)	Incremental Capacity (million tons [MT])[2]
BMM 2/3 Expansion	250	84

[1] Surface disturbance acreages are provided in **Table 2.4-1**.

[2] Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

New process ponds would be constructed within the proposed process areas associated with the BMM 2/3 Expansion HLF. **Table 2.4-5** summarizes the conceptual pond design parameters within the proposed Numbers Area.

Table 2.4-5 North Operations Area Project Conceptual Pond Design Parameters – Numbers Area

Pond	100-year, 24-hour Storm Event (inches)[1]	Pond Depth (ft)	Operating Capacity (million gallons)
BMM 2/3 Expansion Process	2.86	22	25.0
BMM 2/3 Expansion Storm Water/Event	2.86	20	11.2

[1] Storm event source data from the National Oceanographic and Atmospheric Administration (NOAA) Atlas 14, Volume 1, Version 5 (2011).

Source: Barrick 2012a.

Proposed Interpit Areas, Haul Roads, and Access Roads

No additional development, reconfiguration, or expansion of interpit areas, haul roads, or access roads are anticipated within the proposed Numbers Area.

Interpit Areas

For construction purposes, roads would be developed between an open pit and its respective RDA collectively referred to as an “interpit area.” Per existing permit authorizations, Barrick would continue the use of the existing interpit areas within the proposed Numbers Pit Complex, LJR 1 Pit, and LJR 2 Pit. When no longer necessary for operations, the interpit areas would be reclaimed.

Haul Roads

Per existing permit authorizations, Barrick would continue the use of the existing haul roads within the proposed Numbers Area. Drainage cut-outs in haul road berms would, wherever possible, be strategically placed where haul roads cross mule deer migration corridors. These drainage cuts would be placed to reduce the difficulty and consequently, the resulting energy expenditure of migrating deer attempting to cross the haul roads.

In addition to leach material hauling temporary ramps, secondary roads, and haul roads also would be utilized for the RDA hauls and other associated mining activities. Temporary ramps generally would be built to the same specifications as the haul roads and in accordance with Mine Safety and Health Administration (MSHA) safety requirements.

During road construction, growth media would be salvaged, where practicable, and placed in berms along the roads for preservation during mining activities and availability during reclamation. Growth media berms would not be placed in mule deer migration corridors including haul road berm cuts and identified mule deer migration corridors. Growth media berms remaining in place throughout a growing season would be seeded with an interim seed mix. Storm water and erosion control features would be developed as necessary utilizing BMPs as described in the Stormwater Pollution Prevention Plan (SWPPP) (NOA PoO, Appendix I) (Barrick 2012a).

Access Roads to Monitoring Wells, Water Wells, and Piezometers

Per existing permit authorizations, Barrick would continue the use of existing access roads to the existing/authorized monitoring well and piezometer sites within the proposed Numbers Area. No existing/authorized or proposed water wells are located within the proposed Numbers Area.

Public Access Roads

Barrick would restrict public access to the existing roads that cross active mining areas per MSHA requirements. Public access would be controlled with fences and locked gates or other physical methods. **Figure 2.4-6** illustrates public access roads and possible traffic control points which would provide monitored access within the proposed NOA. A Traffic Management Plan for the proposed NOA project has been developed to provide standard construction, operation, and maintenance practices for light vehicles and mine equipment traffic using public access routes and locations where mine roads intersect public roads (NOA PoO, Appendix J) (Barrick 2012a).

Proposed Ancillary and Support Facilities

The following proposed ancillary and support facilities would be developed within the proposed Numbers Area.

Growth Media Stockpiles

Per existing permit authorizations, Barrick would continue the use of the existing GMSs located throughout the proposed Numbers Area.

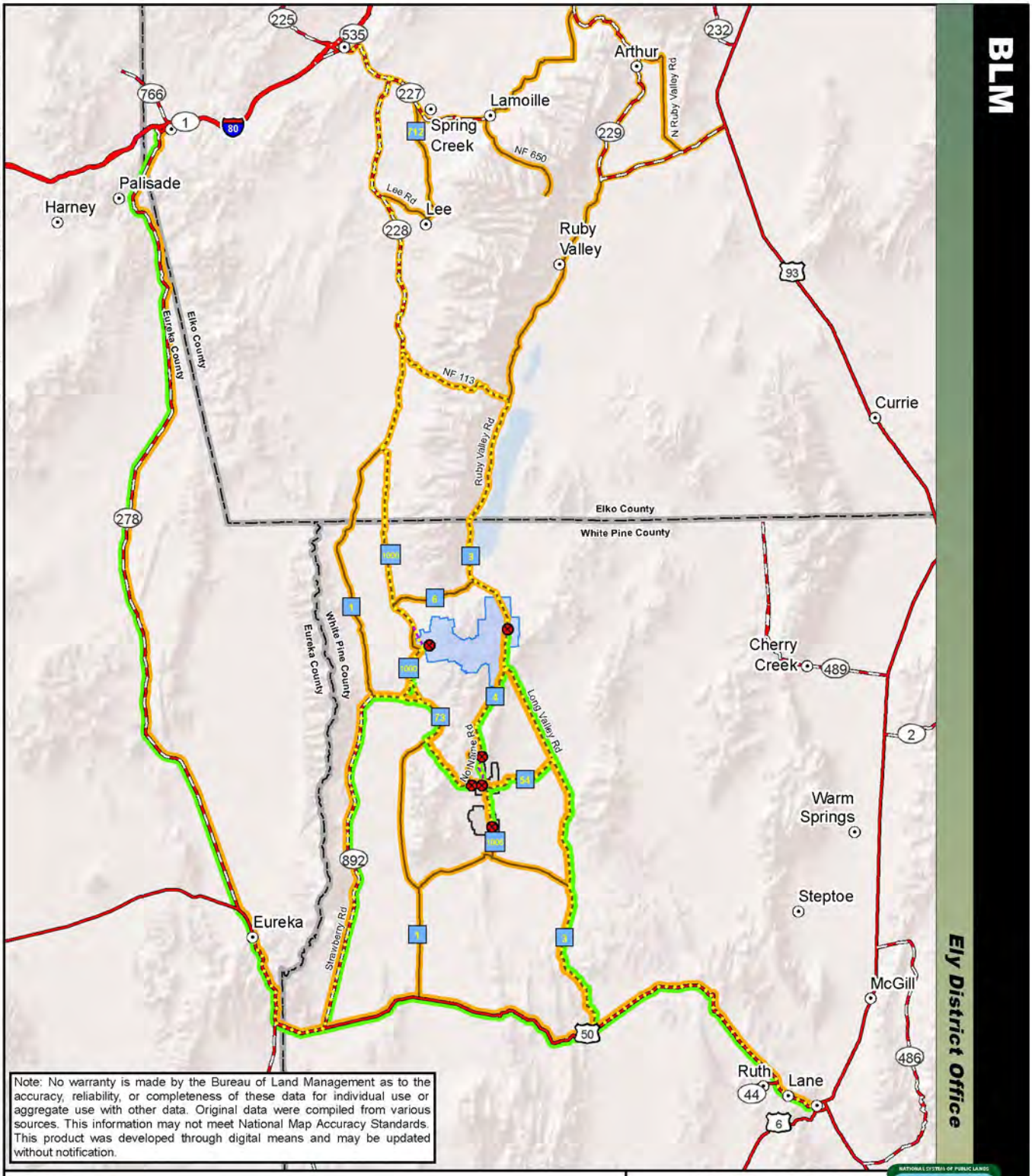
Borrow Pits

There are no proposed designated borrow pit locations for the proposed NOA project; however, Barrick anticipates continuing the current practice of developing borrow areas from authorized disturbance areas, where the appropriate material is available. Borrow materials would be used to supply road base, gravel, heap overliner, etc. to support mining and processing operations.

A temporary crusher and screening plant would be installed during operations to develop a source of clean gravel for mining operations. The crushed and screened material would be used for HLF overliner or for evapo-transpiration cell (ET cell) backfill material. A site-specific location would be chosen during construction within an area authorized for disturbance. Temporary stockpiles would be established near the proposed place of use within areas authorized for facility disturbance.

Transmission Lines and Substations

No existing/authorized or proposed transmission lines, substations, transformer upgrades or expansions are located or proposed for development within the proposed Numbers Area.



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

Legend

- Proposed NOA Plan Boundary
- Proposed SOA Plan Boundary
- Interstate Highway
- U.S. Highway
- State Highway
- Local Road
- Closed to Public
- Possible Traffic Control Point
- Public Access Route
- Hazardous Materials Route
- Employee Access Route

Source: SRK 2012, 2015.

Bald Mountain Mine North and South Operations Area Projects EIS

Figure 2.4-6

Public Access and Hazardous Materials Transportation Routes to/from the North and South Operations Area Projects

0 5 10 20 Miles

N

2/15/2016

Communication Sites

Per existing permit authorizations, Barrick would continue the use of the existing communication sites within the proposed Numbers Area. To continue establishing a communication system throughout the proposed NOA project, Barrick would construct additional radio tower sites. Specific locations for proposed radio tower sites have not yet been determined; however, Barrick proposes to bond for 5 acres of disturbance associated with additional radio tower sites within the proposed NOA. Prior to construction, Barrick would provide a map of the radio tower sites, access routes, and a description of the buildings and masts that would be constructed at each site to the BLM and NDOW for review and concurrence.

Radio tower sites typically consist of an 8-foot by 20-foot connex on skids. The connex would contain solar panels and radio equipment. Radio masts for the antennas would be constructed using a lattice frame design approximately 60 to 100 feet high. The type of radio mast installed would vary with radio site location.

Water Supply

The estimated groundwater pumping required for the project is described in Section 3.3.2 and the locations of the water supply wells are shown on **Figure 3.3-14**. Water supply wells that would be used for groundwater production are listed in **Table 3.3-8**, and water pumping requirements are summarized in **Table 3.3-9** and illustrated in **Figure 3.3-15**.

Fences

Process ponds, storm water/event ponds, and other areas of cyanide use would be fenced with 8-foot-high wildlife exclusion fence in accordance with NDOW guidelines. Where necessary, Barrick would fence proposed project facilities with a three-strand smooth-wire style range fence. Existing and newly constructed fences would be maintained by Barrick throughout the life of the project, and removed upon closure. To the extent possible, fencing would not be placed within the designated mule deer migration corridors, adjacent to haul road berm cuts, or other areas know to be frequent crossings for mule deer migration.

Ancillary Areas and Yards

Ancillary and support facilities may be constructed within the process disturbance areas at the BMM 2/3 Expansion HLF. Ancillary and support facilities may include, but are not be limited to the following: pipelines, transmission lines, potable water storage tanks, freshwater storage tanks, storage buildings, and fuel/lube skids. Although a patchwork of undisturbed vegetation may remain in these disturbed areas during operations, Barrick would bond for the entire ancillary disturbance area.

Buildings

No existing/authorized or proposed buildings are located or proposed for development within the proposed Numbers Area.

<u>Proposed Water Management</u>

Pit Dewatering

A hydrological investigation outlining baseline hydrological data and groundwater model results was conducted within the proposed NOA project and summarized within the PoO (Appendix E) (Barrick 2012a). This investigation included a formal program for the installation of wells and piezometers to monitor groundwater conditions. This includes a total of 20 piezometers and eight monitoring wells. The eight monitoring wells were drilled specifically to determine groundwater quality and elevation in areas adjacent to proposed new or expanded pits, RDAs, or HLFs. This drilling and monitoring program

indicates that the proposed Numbers Pit Complex, LJR 1 Pit, or LJR 2 Pits would not intercept groundwater.

In 2015, Geomega updated the regional flow model with the recent water level data and projected the required dewatering rates under various scenarios and potential environmental impacts to groundwater resources (Geomega 2015).

Storm Water Management

A SWPPP (NOA PoO, Appendix I) was developed in accordance with the requirements of NDEP's General Permit for Stormwater Discharges (NVR30000). The SWPPP outlines the project description, potential sources of storm water pollution, and BMPs to control erosion and prevent the release of pollutants in storm water.

Storm water would be managed in accordance with the SWPPP (NOA PoO, Appendix I) (Barrick 2012a). When possible, storm water run-off from undisturbed areas upgradient would be diverted around open pits, HLFs, RDAs, and GMSs and returned to natural drainages during operations. Areas with potential pollutants (e.g., fuel islands and process facilities) would be designed with concrete or earthen double lined containment structures, or a combination of both to prevent storm water run-off. Containment structures are designed at 110 percent the capacity of the largest tank. Storm water would be diverted from parking areas and roads using diversions and ditches conveyed to storm water ponds and natural drainage or sediment basins.

Disturbed areas such as heap leach and process facilities would be self-contained, and diversion channels in this area would be routed to storm water collection ponds with the use of culverts, diversion ditches, and piping, where applicable. Storm water collected in the ponds would be handled in accordance with the State of Nevada WPCP, which would allow for utilizing collected storm water in the process circuit. The facilities and components within the self-contained areas would be designed to handle a 25-year, 24-hour storm event and withstand the 100-year, 24-hour storm event. Where appropriate, containment berms would be constructed below RDAs to contain potential runoff from the slopes. An annual compliance report would be completed and submitted to the NDEP-BWPC.

Additional storm water and erosion control features would be developed as necessary utilizing the BMPs as outlined in the SWPPP. To properly operate and maintain the facilities and systems of treatment and control of storm water management, Barrick would conduct visual inspections of the facilities and employ proper maintenance and operations on structural and erosion controls. Construction, maintenance, and inspection practices for storm water controls are discussed in the SWPPP.

2.4.1.4 Redbird and Rat Areas

The following section outlines the proposed development, reconfiguration, and/or expansion of various facilities located within the Redbird and Rat areas within the proposed NOA project. In summary, Barrick proposes to amend its existing NOA PoO to conduct the following activities within the proposed Redbird and Rat areas:

- Expand the existing RBM Pit to form the proposed Redbird Pit;
- Remove a portion of the existing RBM South RDA based on the expansion of the proposed Redbird Pit;
- Adjust the existing RBM North RDA shape to match the existing disturbance;
- Develop the proposed Redbird RDA;

- Reduce the existing Rat West RDA to accommodate the proposed Redbird RDA; and
- Expand and develop interpit, haul road, access road, and ancillary and support facility infrastructure.

Figures 2.4-1 and **2.4-2** illustrate the existing/authorized and proposed new disturbances and life-of-mine (full build-out), respectively, for the proposed changes and development to the Redbird and Rat areas under the Proposed Action. **Table 2.4-1** summarizes the existing/authorized and proposed surface disturbances for the proposed Redbird and Rat areas under the Proposed Action.

Proposed Open Pits

One existing open pit (i.e., Redbird Pit [former RBM Pit]) would be expanded within the proposed Redbird and Rat areas.

Redbird Pit

The proposed Redbird Pit would include the expansion of the existing RBM Pit to the south, removal of a portion of the existing reclaimed RBM South RDA, and removal of a portion of the existing haul road to the BMM administration area (i.e., illustrated as ancillary facilities located to the east of the BMM 2/3 HLF in **Figure 2.4-2**). The haul road would be rerouted along the southern extent of the proposed Redbird Pit, and storm water controls would be established within interpit and other disturbance areas as required.

Leach material would be hauled to the proposed BMM 2/3 HLF, and waste rock would be hauled to the previously authorized North 5 RDA or to the proposed Redbird RDA. To prevent formation of a pit lake, the Redbird Pit would be partially backfilled, as needed.

Table 2.4-6 summarizes the proposed Redbird Pit design parameters including slope, dimension, and pit bottom elevation. **Table 2.4-7** summarizes anticipated/estimated leach material and waste rock material production quantity within the proposed Redbird Pit.

Table 2.4-6 North Operations Area Project Pit Design Parameters – Redbird and Rat Areas[1]

Proposed Open Pit	Slope (degrees)	Length (ft)	Width (ft)	Depth (ft)	Pit Bottom Elevation (ft amsl)
Redbird	40 – 50	4,735	4,035	1,440	6,020

[1] Surface disturbance acreages are provided in **Table 2.4-1**.

Source: Barrick 2012a.

Table 2.4-7 North Operations Area Project Estimated Ore and Waste Rock Tonnages – Redbird Pit[1]

Proposed Open Pit	Leach Material (MT)	Waste Rock Material (MT)	Total (MT)
Redbird	53	367	420

[1] Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

Proposed Rock Disposal Areas

One new RDA (i.e., Redbird RDA) would be developed and two existing RDAs (i.e., Rat West, and RBM North) would be either be reconfigured without an increased footprint or reduced in size within the proposed Redbird and Rat areas. No facility reconfiguration and/or expansion are anticipated at the existing Rat East RDA.

The percentage of potentially acid-generating (PAG) material for each RDA was determined based on the proposed mine plan. Waste rock considered to become acidic has net neutralizing potential (NNP) values ranging from zero or less and is considered as PAG material. By definition, acid neutralizing potential (ANP) and NNP are the kilograms (kg) of calcium carbonate per metric ton of rock. The higher the ANP and NNP values indicate a reduced likelihood for acid drainage. **Table 2.4-8** summarizes acid-base accounting (ABA) average values within the proposed Redbird and Rat areas.

Table 2.4-8 North Operations Area Project Static Acid-base Accounting Average Values – Redbird and Rat Areas[1]

Proposed Mine Area	Waste Rock Material (MT)[2]	Average Acid Neutralizing Potential (kg/t)	Average Acid Generating Potential (AGP) (kg/t)	Average Net Neutralizing Potential (APN) (kg/t)	Neutralizing Potential Ratio (NPR)
Redbird Pit	367	217	16.2	+200.8	13.39

[1] By definition, ANP and NNP are the kg of calcium carbonate per metric ton of rock and have maximum values of 1,000. Similarly, AGP is the kg of sulfur per metric ton of rock and has a maximum value of 1,000. Higher ANP, NNP, NPR and lower AGP values are favorable and indicate a reduced likelihood for acid drainage. NNP values of 0 or less are considered PAG material.

[2] Values have been rounded to the nearest whole integer.

Source: Barrick 2013.

Redbird RDA

The proposed Redbird RDA would be constructed to accommodate waste rock material from the proposed Redbird Pit. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the proposed Redbird area contains 69.6 percent carbonate-rich waste (NNP >0) with an average NNP of 200.8 kilograms per ton (kg/t) and a neutralization potential ratio (NPR) of 13.39 (Barrick 2012a).

RBM North RDA

The proposed RBM North RDA boundary would be reconfigured to coincide with the existing disturbance. The RBM North RDA would not receive any additional waste rock material.

Rat East and West RDAs

The existing Rat West RDA would be reduced in footprint to accommodate the proposed Redbird RDA. In conjunction with the existing/authorized Rat East RDA, the resulting reduction in Rat West RDA capacity would provide required waste rock storage from the currently authorized mining of the Rat Pit. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the Rat area contains 100 percent carbonate-rich waste with an average NNP of 614.8 kg/t and a NPR of 193.2 (Barrick 2012a).

Table 2.4-9 summarizes proposed RDA height and capacity parameters, and originating source of waste rock material within the proposed Redbird and Rat areas.

Table 2.4-9 North Operations Area Project Rock Disposal Area Design Parameters – Redbird and Rat Areas[1,2]

Rock Disposal Area	Height (ft)	Incremental Capacity (MT)[3]	Source of Waste Rock Material and/or Activity
Redbird	975	379	Redbird Pit
RBM North	275	0	Reconfiguration only
Rat West	550	-39	Reduction of RDA

1 Surface disturbance acreages are provided in **Table 2.4-1**.

2 Elevations were not provided because designs are preliminary and subject to change based on detailed mine planning, project economics, geotechnical considerations, and other engineering design considerations. The RDAs would be constructed within the proposed footprints with an approximate height above original ground surface as listed above.

3 Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

Proposed Ore Processing Facilities

The development of new ore processing facilities is not anticipated within the proposed Redbird and Rat areas.

Proposed Interpit Areas, Haul Roads, and Access Roads

The following proposed interpit areas, haul roads, and access roads would be developed and/or expanded in support of various facilities within the proposed Redbird and Rat areas. Existing/authorized interpit areas, haul roads, and access would continue to be used. Typical in-pit haul road cross-sections are presented as a component of the open pit typical within the NOA PoO (Figure 2) (Barrick 2012a).

Interpit Areas

Per existing permit authorizations, Barrick would continue the use of the existing interpit areas within the existing/authorized Rat Pit area. Additional interpit areas would be developed adjacent to the proposed Redbird Pit. The interpit areas would include patchworks of undisturbed vegetation; however, for the purposes of this analysis, it is assumed that the entire interpit area would be disturbed for permitting and bonding purposes. As the RDAs advance towards the pit, the interpit area would be incorporated into the RDAs. When no longer necessary for operations, the interpit areas would be reclaimed.

Haul Roads

Per existing permit authorizations, Barrick would continue the use of the existing haul roads within the Redbird and Rat areas. Additional haul roads would be developed adjacent to the Redbird Pit. Generally, haul roads would connect the proposed open pits with the associated proposed RDAs, as well as provide routes to transport leach material to the nearest available HLF. Maximum running widths for proposed haul roads would be 110 feet with average surface disturbance widths of 165 feet; actual road disturbance may vary depending upon underlying topography. Road disturbance would include berms, storm water BMPs, and road cuts, where required by existing topography and where necessitated to facilitate mule deer migration.

Drainage cut-outs in haul road berms would, wherever possible, be strategically placed where haul roads cross mule deer migration corridors. These drainage cuts would be placed to reduce the difficulty and consequently, the resulting energy expenditure of migrating deer attempting to cross the haul roads.

Temporary ramps, secondary roads, and haul roads would be utilized for the RDA hauls and other associated mining activities in addition to leach material hauling. Temporary ramps generally would be built to the same specifications as the haul roads and in accordance with MSHA safety requirements. Haul road construction practices would be the same as those discussed in Section 2.4.1.3, Haul Roads (Numbers Area).

Access Roads to Monitoring Wells, Water Wells, and Piezometers

Per existing permit authorizations, Barrick would continue the use of existing access roads to the existing/authorized monitoring well and piezometer sites within the Redbird and Rat areas.

Public Access Roads

Per existing permit authorizations, Barrick would restrict public access to the existing roads that cross active mining areas per MSHA requirements. Public access would be controlled with fences and locked gates or other physical methods. **Figure 2.4-6** illustrates public access roads and possible traffic control points which would provide monitored access within the proposed NOA. Traffic management practices would be the same as those discussed in Section 2.4.1.3, Public Access Roads (Numbers Area).

Proposed Ancillary and Support Facilities

The following proposed ancillary and support facilities, including GMSs, transmission lines, water supply, fences, ancillary areas and yards and buildings would be developed, reconfigured, or expanded within the proposed Redbird and Rat areas. Per existing permit authorizations, Barrick would continue the use of existing ancillary and support facilities within the proposed Redbird and Rat areas.

Growth Media Stockpiles

Per existing permit authorizations, Barrick would continue the use of existing GMSs within the proposed Rat East, Rat West, and RBM North RDAs. Additional GMSs would be developed adjacent to the proposed Redbird Pit, Redbird RDA, and Rat West RDA. Surfaces for support facilities would be grubbed and cleared in a similar manner as for pits and RDAs. Salvageable growth media would be stockpiled in nearby proposed stockpiles for use during reclamation when facilities are no longer needed. Areas proposed for support facilities account for additional surface disturbance that may be required to accommodate existing topography and future reclamation activities. Where possible, GMSs would be located within proposed interpit areas, or on top of proposed RDAs. Alternatively, GMSs may be located at the base of proposed RDAs.

Borrow Pits

There are no proposed designated borrow pit locations for the proposed NOA project; however, Barrick anticipates continuing the current practice of developing borrow areas from authorized disturbance areas, where the appropriate material is available. Borrow pit materials and the development of a crusher and screening plant would be the same as those described in Section 2.4.1.3, Borrow Pits (Numbers Area). Borrow pits would not intentionally be used for watering wildlife without prior written consent of NDOW.

Transmission Lines and Substations

To provide power for electric shovel operations at the proposed Redbird Pit, approximately 2,490 feet of 69-kilovolt (kV) transmission line would be constructed from the existing substation at the BMM administration area. The proposed transmission line would be constructed within existing disturbance for the BMM administration area and the haul road. A single pole structure would be utilized for each proposed transmission line. Proposed new transmission lines would follow Avian Power Line Interaction Committee (APLIC) design standards and would be constructed according to the schematic illustrated in **Figure 2.4-7** or similar APLIC recommended monopole structure. As shown in **Figure 2.4-7**, the design

includes a 60-inch horizontal conductor separation between energized conductors and grounded hardware, and a perch deterrent located between closely spaced phase conductors. In the event spacing and system voltage are not compatible with a perch deterrent, a phase cover would then be used per APLIC guidelines.

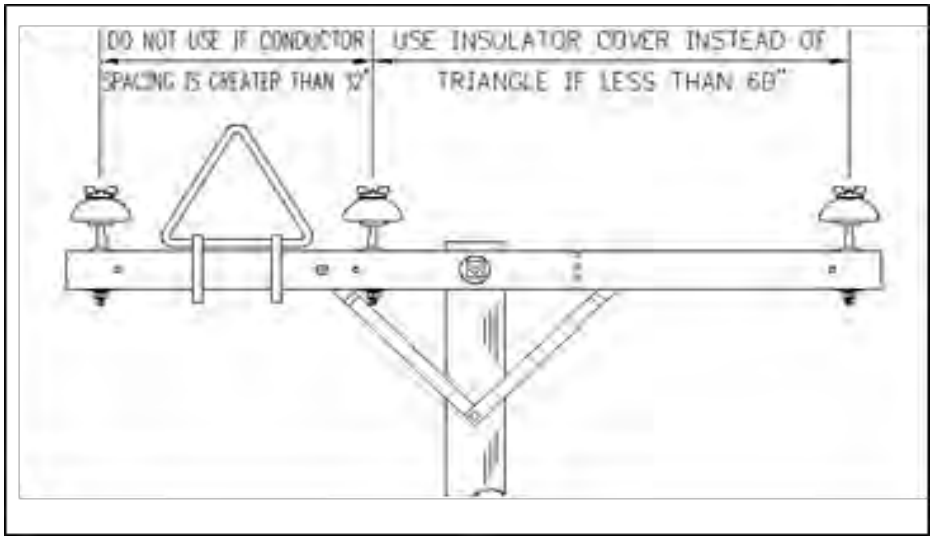


Figure 2.4-7 Proposed 69-kV Transmission Line Pole Structure Type

Typical pole height would be approximately 45 feet tall, with the exception of road crossings, where the wooden poles would extend approximately 100 feet (set approximately 60 feet above the haul road surface). The associated disturbance corridors would contain sufficient area for pole placement and temporary use areas for pulling, splicing, and tensioning. Site-specific pole placement would be defined prior to construction. No substation or transformer upgrades or expansions are anticipated for the Redbird and Rat areas.

Where transmission lines cross haul roads, Barrick would provide minimum clearance so that the largest haul truck can pass under the transmission line with the bed fully raised with at least 1 foot of clearance. Where practical, as much as 15 feet of clearance between the raised truck bed and the transmission line would be established. In truck crossing areas, wooden poles approximately 100 feet long would be used to set the transmission line approximately 60 feet above the haul road surface.

Mount Wheeler Power supplies electrical power to the existing transmission lines and associated substations and transformers, and would continue to provide proposed electrical power needs within the proposed NOA project. Barrick would obtain necessary permits from, and coordinate construction and operation specifications (including engineering design considerations) with Mount Wheeler Power.

Communication Sites

To continue establishing a communication system throughout the proposed NOA project, Barrick would construct additional radio tower sites. Radio tower site design parameters would be the same as those discussed in Section 2.4.1.3, Communication Sites (Numbers Area).

Water Supply

The estimated groundwater pumping required for the project is described in Section 3.3.2 and the locations of the water supply wells are shown on **Figure 3.3-14**. Water supply wells that would be used

for groundwater production are listed in **Table 3.3-8**, and water pumping requirements are summarized in **Table 3.3-9** and illustrated in **Figure 3.3-15**.

To ensure adequate water supply for process and dust suppression in the LBM Area, a proposed water pipeline would be established from approved and/or proposed wells. Within the proposed Redbird and Rat areas, the proposed water pipeline would be constructed between the Redbird Pit and Redbird RDA adjacent to the haul road. Where possible, the pipelines would be established within existing/authorized or proposed disturbance footprints of other facilities. Storage tanks, booster pumps, pump houses, generators, and other power infrastructure would be installed pending detailed pumping and pipeline design. Portions of the pipelines may be buried.

Fences

Fencing specifications would be consistent with those described in Section 2.4.1.3, Fences (Numbers Area).

Ancillary Areas and Yards

Ancillary disturbance areas are proposed adjacent to the Rat West RDA, Redbird RDA, and Redbird Pit. Ancillary and support facilities may include, but are not be limited to the following: pipelines, transmission lines, potable water storage tanks, freshwater storage tanks, storage buildings, and fuel/lube skids. Although a patchwork of undisturbed vegetation may remain in these disturbed areas during operations, Barrick would bond for the entire ancillary disturbance area.

Buildings

No existing/authorized or proposed buildings are located or proposed for development within the proposed Redbird and Rat areas.

<u>Proposed Water Management</u>

Pit Dewatering

A hydrological investigation outlining baseline hydrological data and groundwater model results was conducted within the proposed NOA project and summarized within the PoO (Appendix E) (Barrick 2012a). It is expected that the proposed Redbird Pit would intercept groundwater. The estimated pre-mining groundwater elevation in the proposed Redbird Pit area is in the range of 6,100 to 6,400 feet amsl, with a large gradient that goes through the pit. The planned open pit bottom is 6,010 feet amsl. Based on the Geomega 2015 modeling study, dewatering of the Redbird Pit ranges from approximately 133 gpm during the first year of dewatering and then declines to between 80 gpm and 41 gpm during the subsequent years. To prevent formation of a pit lake, the proposed Redbird Pit would be backfilled above the anticipated water level.

Storm Water Management

Storm water would be managed in accordance with the SWPPP (NOA PoO, Appendix I) (Barrick 2012a). Storm water controls for construction, maintenance, and monitoring practices within the proposed NOA project would be consistent with those described in Section 2.4.1.3, Storm Water Management (Numbers Area).

2.4.1.5 Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon Areas

The following section outlines the development, reconfiguration, and/or expansion of each facility located within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas within the proposed NOA project under the Proposed Action. In summary, Barrick proposes to amend its existing NOA PoO to conduct the following activities within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas:

- Expand the existing Top/Sage Flat Pit Complex to form the proposed Top Pit Complex;
- Develop the proposed Poker Flats, Duke, and South Duke pits;
- Expand the existing South Water Canyon RDA to accommodate changes to a temporary haul road within the RDA disturbance boundary;
- Expand the existing East Sage and Sage Flat RDAs;
- Develop the proposed Poker Flats and Duke RDAs;
- Develop the North Poker Flats and South Poker Flats HLFs and associated process facilities, solution ponds, and storm water ponds;
- Develop solution pipelines between the North Poker Flats, South Poker Flats, and Winrock HLFs; and
- Between Poker Flats and the Mooney Basin Heap Leach Pad area, expand and develop interpit, haul road, access road, and ancillary and support facility infrastructure, as detailed below.

Figures 2.4-1 and **2.4-2** illustrate the existing/authorized and proposed new disturbances and life-of-mine (full build-out), respectively, for the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas under the Proposed Action. **Table 2.4-1** summarizes the existing/authorized and proposed surface disturbances for the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas under the Proposed Action.

Proposed Open Pits

One existing open pit, Top Pit Complex, would be expanded, and three new open pits (i.e., Duke, South Duke, and Poker Flats Pit) would be developed within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas.

Top Pit Complex

The proposed Top Pit Complex would expand the existing Top/Sage Flat Pit Complex to the north and east. The proposed pit expansion would remove a portion of the existing East Sage RDA. Leach material would be hauled to the proposed BMM 2/3 HLF Expansion, the proposed LBM HLF, or the previously authorized Mooney HLFs. Waste rock material would be hauled to one of the following authorized RDAs or RDA expansions: South Water Canyon, East Sage, or Sage Flat.

Based on the calibrated 2015 flow model, the Top Pit Complex would be mined approximately 270 feet below the estimated pre-mining groundwater table. According to the current mining schedule, dewatering rates of the Top Pit would range from approximately 45 gpm during the first year of dewatering and then decline to between 25 gpm and 18 gpm over the subsequent years. As illustrated in **Figure 2.4-1**, up to three production wells would be located along the northwest highwall of the Top Pit Complex.

Water from pit dewatering would be transported via pipeline or truck to the HLFs for use as process make-up water, dust control, or drilling activities.

It is anticipated that the Top Pit Complex would develop a pit lake in post-closure; however, within the proposed closure plan, backfilling of the pit to an elevation about the recovered water levels would preclude the formation of a pit lake. The potential for pit lake formation was evaluated based on pit design, water level measurements, and hydrogeologic conditions. There is no historical record of pit lake formation, and although there may be low flow seepage from the west wall of the pit, evaporation would likely exceed ponding, and the pit would remain dry or require minor sumping during mining. Approximately 4.5 MT of carbonate-rich backfill ultimately would be placed in the Top Pit to a height of approximately 6,375 feet amsl. Carbonate-rich pit backfill material would be procured from other parts of the Top Pit Complex. Backfill to these elevation levels would prevent formation of a post-closure pit lake,

as discussed in Section 3.3, Water Quality and Quantity. The existing/authorized Sage Flat pit backfill configuration would be modified to accommodate the reconfiguration of the proposed Top Pit Complex (Barrick 2012a). Although no change in the volume of Sage Flat pit backfill is anticipated, carbonate-rich backfill material in this area may be placed as high as 7,800 feet amsl. The actual amount of backfill placed and the backfill elevation would be adjusted during operations based on changes in the mine plan or mine scheduling, proposed project economic changes (i.e., costs of consumables, metals prices, etc.) over time, and hydrological conditions encountered during mining.

Duke Pit and Duke South Pit

The proposed Duke Pit would be located west and south of the proposed Duke RDA, and the proposed South Duke Pit would be located east of the proposed Poker Flats Pit. Leach material from the Duke and South Duke pits would be hauled to the North Poker Flats or the South Poker Flats HLFs; waste rock material would be hauled to the following proposed RDAs: Duke, Poker Flats, South Duke RDA 1, and South Duke RDA 2.

Poker Flats Pit

The proposed Poker Flats Pit would be located east of the authorized East Sage RDA. Leach material would be hauled to the proposed South Poker Flats HLF; waste rock material would be hauled to the proposed East Sage RDA expansion and the Poker Flats RDA.

Table 2.4-10 summarizes the proposed open pit design parameters within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas including slope, dimension, and pit bottom elevation. **Table 2.4-11** summarizes anticipated/estimated leach material and waste rock material production quantity within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas.

Table 2.4-10 North Operations Area Project Open Pit Design Parameters – Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon Areas[1]

Proposed Open Pit	Slope (degrees)	Length (ft)	Width (ft)	Depth (ft)	Pit Bottom Elevation (ft amsl)
Top Pit Complex	30 – 55	6,845	4,590	2,160	6,100
Poker Flats	45 – 50	3,875	2,300	800	6,550
Duke	40 – 50	4,200	3,130	625	6,350
South Duke	40 – 50	3,310	2,990	675	6,175

[1] Surface disturbance acreages are provided in **Table 2.4-1**.

Source: Barrick 2012a.

Table 2.4-11 North Operations Area Project Estimated Ore and Waste Rock Tonnages – Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon Areas[1]

Proposed Open Pit	Leach Material (MT)	Waste Rock Material (MT)	Total (MT)
Top Pit Complex	42	303	345
Poker Flats	23	28	51
Duke and South Duke	21	74	95
Total	**86**	**405**	**490**

[1] Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

Proposed Rock Disposal Areas

Three existing RDAs (i.e., East Sage, Sage Flat, and South Water Canyon) would be reconfigured or expanded, and four new RDAs (i.e., Duke. Poker Flats, South Duke RDA 1, and South Duke RDA 2) would be developed within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas.

The percentage of PAG material for each RDA was determined based on the proposed NOA project mine plan. **Table 2.4-12** summarizes ABA average values within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas.

Table 2.4-12 North Operations Area Project Static Acid-base Accounting Average Values – Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon Areas[1]

Proposed Mine Area	Waste Rock Material (MT)[2]	Average Acid Neutralizing Potential (kg/t)	Average Acid Generating Potential (kg/t)	Average Net Neutralizing Potential (APN) (kg/t)	Neutralizing Potential Ratio (NPR)
Poker Flats	28	305	22.0	+283.0	13.86
Duke and South Duke	74	305	22.3	+282.7	13.68

[1] By definition, ANP and NNP are the kg of calcium carbonate per metric ton of rock and have maximum values of 1,000. Similarly, AGP is the kg of sulfur per metric ton of rock and has a maximum value of 1,000. Higher ANP, NNP, NPR and lower AGP values are favorable and indicate a reduced likelihood for acid drainage. NNP values of 0 or less are considered PAG material.

[2] Values have been rounded to the nearest whole integer.

Source: Barrick 2013.

South Water Canyon RDA

The proposed South Water Canyon RDA would be modified to the south to accommodate changes to a temporary haul road located within the RDA disturbance boundary. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the Top Pit area contains 98.7 percent carbonate-rich waste with an average NNP of 647.4 kg/t and a NPR of 250 (Barrick 2012a).

East Sage RDA

The proposed East Sage RDA would be expanded to the east to accommodate waste rock material from the proposed Top Pit Complex expansion and the proposed Poker Flats Pit. The proposed East Sage RDA would be reduced on the west side to accommodate the Top Pit Complex expansion, and the reclaimed slopes on the south side would be reconfigured for additional storage capacity. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the Top Pit area contains 98.7 percent carbonate-rich waste with an average NNP of 647.4 kg/t and a NPR of 250 (Barrick 2012a).

Sage Flat RDA

The proposed Sage Flat RDA would be reconfigured to allow for changes to the waste rock placement sequence of the Top Pit Complex. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the Top Pit area contains 98.7 percent carbonate-rich waste an average NNP of 647.4 kg/t and a NPR of 250 (Barrick 2012a).

Duke RDA

The proposed Duke RDA, located northwest of the proposed Duke Pit, would be constructed within a previously undisturbed area. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the Poker Flats area contains 91.6 percent carbonate-rich waste an average NNP of 283 kg/t and a NPR of 13.86 (Barrick 2012a).

Poker Flats RDA

The proposed Poker Flats RDA, located northeast of the Poker Flats Pit, would be constructed within a previously undisturbed area. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the Poker Flats area contains 91.6 percent carbonate-rich waste an average NNP of 283 kg/t and a NPR of 13.86 (Barrick 2012a).

South Duke RDA 1

The proposed South Duke RDA 1, located north of the proposed South Duke Pit, would be constructed within a previously undisturbed area. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the Duke area contains 91.9 percent carbonate-rich waste an average NNP of 282.7 kg/t and a NPR of 13.68 (Barrick 2012a).

South Duke RDA 2

The proposed South Duke RDA 2, located east of the proposed South Duke Pit, would be constructed within a previously undisturbed area. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the Duke area contains 91.9 percent carbonate-rich waste an average NNP of 282.7 kg/t and a NPR of 13.68 (Barrick 2012a).

Table 2.4-13 summarizes proposed RDA height and capacity parameters, and originating source of waste rock material within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas.

Table 2.4-13 North Operations Area Project Rock Disposal Area Design Parameters – Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon Areas[1,2]

Rock Disposal Area	Height (ft)	Incremental Capacity (MT)[3]	Source of Waste Rock Material
South Water Canyon	750	95	Top Pit Complex
East Sage	1,225	216	Top Pit Complex and Poker Flats Pit
Sage Flat	475	9	Top Pit Complex
Poker Flats	525	78	Poker Flat Pit
Duke	225	2	Duke Pit, South Duke Pit
South Duke RDA 1	325	19	Duke Pit, South Duke Pit
South Duke RDA 2	225	17	Duke Pit, South Duke Pit

[1] Surface disturbance acreages are provided in **Table 2.4-1**.

[2] Elevations were not provided because designs are preliminary and subject to change based on detailed mine planning, project economics, geotechnical considerations, and other engineering design considerations. The RDAs would be constructed within the proposed footprints with an approximate height above original ground surface as listed above.

[3] Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

Proposed Ore Processing Facilities

Two HLFs (i.e., North Poker Flats and South Poker Flats) and associated process facilities including solution and storm water ponds and solution pipelines would be developed within the Poker Flats area (**Figure 2.4-2**).

North Poker Flats and South Poker Flats HLF

The proposed North and South Poker Flats HLFs would be designed to accommodate leach material from the following pits: Royale, Casino, Duke, South Duke, and Poker Flats. Depending on exploration and condemnation drilling results, the North Poker Flats HLF may not be constructed, or the South Poker Flats HLF footprint may be smaller than proposed.

Table 2.4-14 summarizes proposed HLF height and capacity parameters within the proposed Mooney Basin and Galaxy areas.

Table 2.4-14 North Operations Area Project Heap Leach Facility Design Parameters – Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon Areas[1,2]

Heap Leach Facility	Heap Height (ft)	Incremental Capacity (MT)[2]
North Poker Flats	250	26
South Poker Flats	250	84

[1] Surface disturbance acreages are provided in **Table 2.4-1**.

[2] Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

New process ponds, carbon columns, and support facilities would be constructed adjacent to the proposed South Poker Flats HLF. New process ponds would be constructed within the proposed process areas associated with the North Poker Flats HLF. If practical, solution from the North Poker Flats HLF would be piped to the proposed carbon columns at either the Mooney Basin HLF, South Poker Flats HLF, or the Winrock HLF. Alternatively, solution from the South Poker Flats HLF would be piped to the proposed carbon columns at the Winrock HLF. Transfer of solution would be conducted using secondary containment, such as pipe-in-pipe or pipelines in lined conveyance ditches, with secondary containment sized to accommodate 110 percent of the transfer pipeline contents. At the crossing of White Pine County Road 3, the pipeline would be placed in a culvert under the county road. The culvert would be installed in accordance with applicable standards and specifications, and relevant county permits would be obtained prior to installation. Where necessary, wildlife protection measures associated with the pipeline corridors, such as crossings, would be developed. **Table 2.4-15** summarizes the conceptual pond design parameters within the proposed Mooney Basin and Galaxy areas.

Table 2.4-15 North Operations Area Project Conceptual Pond Design Parameters – Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon Areas

Pond	100-year, 24-hour Storm Event (inches)[1]	Pond Depth (ft)	Operating Capacity (million gallons)
North Poker Flats Process	2.82	22	24.9
North Poker Flats Storm Water/Event	2.82	20	11.1
South Poker Flats Process	2.84	22	24.9
South Poker Flats Storm Water/Event	2.84	20	11.2

[1] Storm event source data from the NOAA Atlas 14, Volume 1, Version 5 (2011).

Source: Barrick 2012a.

Proposed Areas, Haul Roads, and Access Roads

The following proposed interpit areas, haul roads, and access roads would be developed and/or expanded in support of various facilities within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas. Typical in-pit haul road cross-sections are presented as a component of the open pit typical within the NOA PoO (Figures 2 and 3) (Barrick 2012a).

Interpit Areas

Per existing permit authorizations, Barrick would continue the use of the existing interpit areas within the proposed Top Pit Complex. Additional interpit areas would be developed within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas. Interpit specifications including permitting and operational use would be consistent with those described in Section 2.4.1.4, Interpit Areas (Redbird and Rat Areas).

Haul Roads

Per existing permit authorizations, Barrick would continue the use of existing haul roads within the proposed Top Pit Complex. Previously authorized and constructed haul roads north and southwest of the Top Pit Complex would be removed by the proposed Top Pit Complex expansion. A portion of the existing haul road between the South Water Canyon RDA and the BMM administration facilities would be rerouted to accommodate the proposed Redbird Pit. Surface disturbance associated with storm water controls and rerouting the drainage below the South Water Canyon Seep would be located adjacent to the rerouted haul road.

Additional haul roads would be developed within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas. A haul road from the Galaxy RDA area would be constructed roughly parallel to and along the west side of the existing White Pine County Road 3 (Long Valley Road) to connect the proposed Royale facilities with the existing BMM and Mooney Basin operations. Other haul roads would connect to this northerly route to access the Poker Flats mine components. Haul road, haul road berm, temporary ramp, and secondary road design parameters would be the same as those discussed in Section 2.4.1.4, Haul Roads (Redbird and Rat Areas).

Access Roads to Monitoring Wells, Water Wells, and Piezometers

Per existing permit authorizations, Barrick would continue the use of existing access roads to the existing/authorized monitoring well and piezometer sites. Additional access roads to proposed monitoring well, water well, and piezometer sites would be developed within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas.

Public Access Roads

Barrick would restrict public access to the existing roads that cross active mining areas per MSHA requirements. Public access would be controlled with fences and locked gates or other physical methods. **Figure 2.4-6** illustrates public access roads and possible traffic control points which would provide monitored access within the proposed NOA. Traffic management practices would be the same as those discussed in Section 2.4.1.3, Public Access Roads (Numbers Area).

Proposed Ancillary and Support Facilities

The following proposed ancillary and support facilities, including GMSs, transmission lines, solution line, water supply, fences, ancillary areas and yards and buildings would be developed, reconfigured, or expanded within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas. Per existing permit authorizations, Barrick would continue the use of existing ancillary and support facilities within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas.

Growth Media Stockpiles

Per existing permit authorizations, Barrick would continue the use of existing GMSs within the proposed South Water Canyon RDA, Top Pit Complex, and East Sage RDA. Additional GMSs would be developed adjacent to the proposed Poker Flat and Duke facilities. Growth media stockpiling would be the same as described in Section 2.4.1.4, Growth Media Stockpiles (Redbird and Rat Areas).

Borrow Pits

There are no proposed designated borrow pit locations for the proposed NOA project; however, Barrick anticipates continuing the current practice of developing borrow areas from authorized disturbance areas, where the appropriate material is available. Borrow pit materials and the development of a crusher and screening plant would be the same as those described in Section 2.4.1.3, Borrow Pits (Numbers Area).

Transmission Lines and Substations

Per existing permit authorizations, Barrick would continue the use of its existing transmission line located adjacent to the existing Top Pit Complex and East Sage RDA. A 69-kV transmission line would be constructed from the existing Mooney Basin substation to the Winrock and South Poker Flats process areas. The proposed transmission line, approximately 21,505 feet long, would be constructed adjacent to the existing White Pine County Road 3 (Long Valley Road), with an associated 25-foot-wide disturbance corridor. Portions of the transmission line would be constructed on existing or authorized disturbance attributed to other mine components. For maintenance activities, the transmission line may be accessed from various points along White Pine County Road 3.

An additional 24.9-kV transmission line would be constructed from the existing substation located southeast of the Top Pit Complex to the proposed LBM process area. The proposed transmission line, approximately 14,240 feet long, would be constructed adjacent to the authorized Sage Flats Haul Road and along the east side of the proposed LBM HLF. The associated disturbance corridor would be approximately 25 feet wide. Portions of the proposed transmission line would be constructed on existing, authorized, or proposed disturbance attributed to other mine components. For maintenance activities, the transmission line may be accessed from various points along the haul roads.

Transmission line design parameters and electrical power provider information would be the same as those discussed in Section 2.4.1.4, Transmission Lines and Substations (Redbird and Rat Areas).

Communication Sites

Per existing permit authorizations, Barrick would continue the use of its existing communication sites located adjacent to LBM and the proposed Top Pit Complex. To continue establishing a communication system throughout the proposed NOA project, Barrick would construct additional radio tower sites. Radio tower site design parameters would be the same as those discussed in Section 2.4.1.3, Communication Sites (Numbers Area).

Water Supply

The estimated groundwater pumping required for the project is described in Section 3.3.2 and the locations of the water supply wells are shown on **Figure 3.3-14**. Water supply wells that would be used for groundwater production are listed in **Table 3.3-8**, and water pumping requirements are summarized in **Table 3.3-9** and illustrated in **Figure 3.3-15**.

To ensure adequate water supply for process and dust suppression in the LBM Area, a proposed water pipeline would be established from approved and/or proposed wells. Within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas, the proposed water pipeline would be constructed adjacent to the existing South Water Canyon RDA and Top Pit Complex. Where possible, the pipelines would be established within existing/authorized or proposed disturbance footprints of other facilities. Storage tanks, booster pumps, pump houses, generators, and other power infrastructure would be installed pending detailed pumping and pipeline design. Portions of the pipelines may be buried.

Fences

Fencing specifications would be consistent with those described in Section 2.4.1.3, Fences (Numbers Area).

Ancillary Areas and Yards

Per existing permit authorizations, Barrick would continue the use of the existing ancillary area located adjacent to the South Water Canyon RDA. An additional ancillary disturbance area would be developed adjacent to the South Poker Flats HLF to be utilized as a ready line and fuel/lube area. Ancillary and support facilities also may be constructed within the process disturbance areas at the North Poker Flats and South Poker Flats HLFs. Other miscellaneous support facilities necessary for an active mining operation may be located within the ancillary disturbance areas. Ancillary and support facilities may include, but are not be limited to the following: pipelines, transmission lines, potable water storage tanks, freshwater storage tanks, storage buildings, and fuel/lube skids. Although a patchwork of undisturbed vegetation may remain in these disturbed areas during operations, Barrick would bond for the entire ancillary disturbance area.

Diesel fuel and lubricants would be stored within the ancillary disturbance area adjacent to the South Poker Flats HLF. To help prevent spills or chemical releases, standard operating procedures for fueling

equipment would be observed. If spill or chemical release incidents occur, they would be reported, treated, and documented as required by site WPCPs or other applicable authorities.

Buildings

Process buildings would be located adjacent to the proposed ponds in the South Poker Flats process area. The process buildings would be similar to existing, operating process buildings located at Mooney Basin.

A 100,000-gallon water tank would be located at the Top Ready Line to provide the following: 1) water storage from Top Pit Complex; and 2) a water source for dust control, drilling, or heap leach activities at the LBM HLF. Additional water storage tanks would be placed near the proposed Top Pit wells, near the LBM HLF, or at other locations as determined by engineering design, if necessary. Other support buildings would be constructed as necessary to support active mining operations. These may include, but are not limited to, storage buildings and freshwater well sheds.

Proposed Water Management

Pit Dewatering

A hydrological investigation outlining baseline hydrological data and groundwater model results was conducted within the proposed NOA project and summarized within the PoO (Appendix E) (Barrick 2012a). This investigation indicated that the proposed Top Pit Complex Pit would intercept groundwater. The estimated pre-mining groundwater elevation at the center of the Top Pit Complex is 6,300 feet amsl, and the planned pit bottom is 6,100 feet amsl (Geomega 2011b). Based on the Geomega 2015 modeling study, dewatering of the Top Pit ranges from approximately 28 gpm during the first year of dewatering and then declines to between 22 gpm and 16 gpm during the subsequent years. As discussed in Section 3.3, Water Quality and Quantity, a pit lake would be expected to form in the proposed Top Pit in the post-closure period. To preclude formation of a post-mining pit lake, the Top Pit Complex would be backfilled with carbonate-rich material to an elevation above the projected groundwater rebound elevation during operations. As is the case with current operations, if isolated, perched, saturated zones are encountered in pits other than the Top Pit Complex, diversion ditches and sumps would be installed as necessary to maintain safe operating conditions within the pit. In the event mining does intercept the groundwater table which results in formation of a pit lake in pits other than the Top Pit Complex, the pit would be backfilled with carbonate-rich material above the projected groundwater rebound elevation.

Storm Water Management

Storm water would be managed in accordance with the SWPPP (NOA PoO, Appendix I) (Barrick 2012a). Storm water controls for construction, maintenance, and monitoring practices within the proposed NOA project would be consistent with those described in Section 2.4.1.3, Storm Water Management (Numbers Area).

2.4.1.6 Winrock Area

The following section outlines the development, reconfiguration, and/or expansion of each facility located within the proposed Winrock Area within the proposed NOA project under the Proposed Action. In summary, Barrick proposes to amend its existing NOA PoO to conduct the following activities within the proposed Winrock Area:

- Develop the proposed Winrock North and Winrock South pits;
- Combine and expand the existing Hilltop, Blowout, and Deer Camp pits to form the proposed Winrock Main Pit;
- Develop the proposed Winrock North and Winrock East RDAs;

- Expand the existing Winrock West RDA to form the proposed Winrock East RDA;
- Develop the proposed Winrock HLF and associated process facilities, solution ponds, and storm water ponds;
- Developed solution pipelines between the proposed Winrock, North Poker Flats, and South Poker Flats HLFs; and
- Expand and develop interpit, haul road, access road, and ancillary and support facility infrastructure, as detailed below.

Figures 2.4-1 and **2.4-2** illustrate the existing/authorized and proposed new disturbances and life-of-mine (full build-out), respectively, for the proposed Winrock Area under the Proposed Action. **Table 2.4-1** summarizes the existing/authorized and proposed surface disturbances for the proposed Winrock Area under the Proposed Action.

Proposed Open Pits

One existing open pit (i.e., Winrock Main Pit [former Hilltop, Blowout, and Deer Camp pits]) would be expanded, and two new open pits (i.e., Winrock North and South pits) would be developed within the proposed Winrock Area.

Winrock Main Pit, Winrock North Pit, and Winrock South Pit

The Winrock Main Pit would include the expansion and consolidation of the existing Hilltop, Blowout, and Deer Camp pits. Reclaimed haul roads would be removed by the proposed Winrock Main Pit. The proposed Winrock North Pit would be located north of the proposed Winrock Main Pit, and the proposed Winrock South Pit would be located southwest of the Winrock Main Pit. Leach material from the Winrock pits would be hauled to the proposed Winrock HLF; waste rock material would be hauled to the associated Winrock North RDA, Winrock East RDA, and Winrock West RDA.

Table 2.4-16 summarizes the proposed open pit design parameters within the proposed Winrock Area including slope, dimension, and pit bottom elevation. **Table 2.4-17** summarizes anticipated/estimated leach material and waste rock material production quantity within the proposed Winrock Area.

Table 2.4-16 North Operations Area Project Open Pit Design Parameters – Winrock Area[1]

Proposed Open Pit	Slope (degrees)	Length (ft)	Width (ft)	Depth (ft)	Pit Bottom Elevation (ft amsl)
Winrock Main	45 – 50	2,780	2,640	900	6,200
Winrock North	45 – 50	905	645	200	6,575
Winrock South	45 – 50	1,650	600	300	6,800

[1] Surface disturbance acreages are provided in **Table 2.4-1**.

Source: Barrick 2012a.

Table 2.4-17 North Operations Area Project Estimated Ore and Waste Rock Tonnages – Winrock Area[1]

Proposed Open Pit	Leach Material (MT)	Waste Rock Material (MT)	Total (MT)
Winrock Main, North, and South	34	45	79
Total	**34**	**45**	**79**

[1] Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

Proposed Rock Disposal Areas

One existing RDA (i.e., Winrock West RDA [former Winrock RDA]) would be expanded, and two new RDAs (i.e., Winrock North and Winrock East) would be developed within the proposed Winrock Area.

The percentage of PAG material for each RDA was determined based on the proposed NOA project mine plan. **Table 2.4-18** summarizes ABA average values within the proposed Winrock Area.

Table 2.4-18 North Operations Area Project Static Acid-base Accounting Average Values – Winrock Area[1]

Proposed Mine Areas	Waste Rock Material (MT)[2]	Average Acid Neutralizing Potential (kg/t)	Average Acid Generating Potential (kg/t)	Average Net Neutralizing Potential (APN) (kg/t)	Neutralizing Potential Ratio (NPR)
Winrock	45	194	23.8	+170.2	8.15

[1] By definition, ANP and NNP are the kg of calcium carbonate per metric ton of rock and have maximum values of 1,000. Similarly, AGP is the kg of sulfur per metric ton of rock and has a maximum value of 1,000. Higher ANP, NNP, NPR and lower AGP values are favorable and indicate a reduced likelihood for acid drainage. NNP values of 0 or less are considered PAG material.

[2] Values have been rounded to the nearest whole integer.

Source: Barrick 2013.

Winrock North, East, and West RDAs

The proposed Winrock North, Winrock East, and Winrock West RDAs would be constructed to accommodate waste rock material from the associated Winrock pits. The Winrock North RDA would be constructed by end dumping to one lift height of 100 feet. The Winrock East and Winrock West RDAs would be constructed by end dumping the material, and then using a lift/bench approach to achieve maximum heights of 275 to 375 feet, respectively. Section 2.4.1.12 provides an overview of the design and construction of the RDAs. The proposed Winrock West RDA would encompass the existing reclaimed Winrock RDA, which has been recontoured and seeded but has not been fully reclaimed or released from reclamation responsibilities. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the Winrock area contains 63.7 percent carbonate-rich waste with an average NNP of 170.2 kg/t and a NPR of 8.15 (Barrick 2012a).

Table 2.4-19 summarizes proposed RDA height and capacity parameters, and originating source of waste rock material within the proposed Winrock Area.

Table 2.4-19 North Operations Area Project Rock Disposal Area Design Parameters – Winrock Area[1,2]

Rock Disposal Area	Height (ft)	Incremental Capacity (MT)[3]	Source of Waste Rock Material
Winrock North	100	2	Winrock North Pit
Winrock East	275	13	Winrock Main Pit
Winrock West	375	41	Winrock Main Pit, Winrock South Pit

[1] Surface disturbance acreages are provided in **Table 2.4-1**.

[2] Elevations were not provided because designs are preliminary and subject to change based on detailed mine planning, project economics, geotechnical considerations, and other engineering design considerations. The RDAs would be constructed within the proposed footprints with an approximate height above original ground surface as listed above.

[3] Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

Proposed Ore Processing Facilities

One HLF (i.e., Winrock HLF) and associated process facilities, including solution and storm water ponds and solution pipelines, would be developed within the proposed Winrock Area.

Winrock HLF

The Winrock HLF would be expanded to accommodate leach material from the Royale and Winrock pits. If necessary, portions or all of the existing and reclaimed Winrock HLF would be removed and the spent heap material restacked within the proposed HLF expansion. The spent heap material has been previously authorized for use as overliner material at the Mooney HLFs. The removal and disposal of the existing HLF liners would be determined on a case-by-case basis in consultation with the State of Nevada.

Table 2.4-20 summarizes proposed HLF height and capacity parameters within the proposed Winrock Area.

Table 2.4-20 North Operations Area Project Heap Leach Facility Design Parameters – Winrock Area[1]

Heap Leach Facility	Heap Height (ft)	Incremental Capacity (MT)[2]
Winrock	250	40

[1] Surface disturbance acreages are provided in **Table 2.4-1**.

[2] Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

New process ponds, carbon columns, and support facilities would be constructed adjacent to the proposed Winrock HLF. If practical, solution from the North Poker Flats HLF would be piped to the proposed carbon columns at either the South Poker Flats HLF or the Winrock HLF. Alternatively, solution from the South Poker Flats HLF would be piped to the proposed carbon columns at the Winrock HLF. Transfer of solution would be conducted using secondary containment, such as pipe-in-pipe or pipelines in lined conveyance ditches, with secondary containment sized to accommodate 110 percent of the

transfer pipeline contents. At the crossing of White Pine County Road 3, the pipeline would be placed in a culvert under the county road. The culvert would be installed in accordance with applicable standards and specifications, and relevant county permits would be obtained prior to installation. Where necessary, wildlife protection measures associated with the pipeline corridors, such as crossings, would be developed. **Table 2.4-21** summarizes the conceptual pond design parameters within the proposed Winrock area.

Table 2.4-21 North Operations Area Project Conceptual Pond Design Parameters – Winrock Area

Pond	100-year, 24-hour Storm Event (inches)[1]	Pond Depth (ft)	Operating Capacity (million gallons)
Winrock Process	2.85	22	25.0
Winrock Storm Water/Event	2.85	20	11.2

[1] Storm event source data from the NOAA Atlas 14, Volume 1, Version 5 (2011).

Source: Barrick 2012a.

Proposed Interpit Areas, Haul Roads, and Access Roads

The following proposed interpit areas, haul roads, and access roads would be developed and/or expanded in support of various facilities within the proposed Winrock Area. Typical in-pit haul road cross-sections are presented as a component of the open pit typical within the NOA PoO (Barrick 2012a).

Interpit Areas

Interpit areas would be developed adjacent to the pit and RDA facilities within the proposed Winrock Area. Interpit specifications including permitting and operational use would be consistent with those described in Section 2.4.1.4, Interpit Areas (Redbird and Rat Areas).

Haul Roads

Per existing permit authorizations, Barrick would continue the use of the existing haul road located within the Winrock Area as well as developing additional haul roads. A haul road from the Galaxy RDA area would be constructed roughly parallel to and along the west side of the existing White Pine County Road 3 (Long Valley Road) to connect the proposed Royale facilities with the existing BMM and Mooney Basin operations. Other haul roads would connect to this northerly route to access the Winrock mine components. To access the Winrock facilities, White Pine County Road 3 would be crossed. Mobile mine equipment would travel through the county road intersection to the BMM maintenance shop facilities for regularly scheduled maintenance or as required to maintain an operational equipment fleet. Light vehicle traffic would cross the county road regularly when the Winrock process area is in operation. Flaggers or other traffic control measures would be utilized as necessary to direct traffic and to maintain public safety when mine equipment is mobilizing to the Winrock area. Traffic management practices would be the same as those discussed in Section 2.4.1.3, Public Access Roads (Numbers Area).

Haul road, haul road berm, temporary ramp, and secondary road design parameters would be the same as those discussed in Section 2.4.1.4, Haul Roads (Redbird and Rat Areas).

Access Roads to Monitoring Wells, Water Wells, and Piezometers

Per existing permit authorizations, Barrick would continue to the use of existing access roads to the existing/authorized water well. Additional access roads to proposed water well and piezometer sites would be developed within the proposed Winrock Area.

Public Access Roads

Per existing permit authorizations, Barrick would restrict public access to the existing roads that cross active mining areas per MSHA requirements. Public access would be controlled with fences and locked gates or other physical methods. **Figure 2.4-6** illustrates public access roads and possible traffic control points which would provide monitored access within the proposed NOA. Traffic management practices would be the same as those discussed in Section 2.4.1.3, Public Access Roads (Numbers Area).

Proposed Ancillary and Support Facilities

The following proposed ancillary and support facilities, including GMSs, transmission lines, water supply, fences, ancillary areas and yards and buildings would be developed within the proposed Winrock Area.

Growth Media Stockpiles

GMSs would be developed adjacent to the proposed Winrock HLF and Winrock North, East, and West RDAs. Surfaces for support facilities would be grubbed and cleared in a similar manner as for open pits and RDAs. Growth media stockpiling would be the same as described in Section 2.4.1.4, Growth Media Stockpiles (Redbird and Rat Areas).

Borrow Pits

There are no proposed designated borrow pit locations for the proposed NOA project; however, Barrick anticipates continuing the current practice of developing borrow areas from authorized disturbance areas, where the appropriate material is available. Borrow pit materials and the development of a crusher and screening plant would be the same as those described in Section 2.4.1.3, Borrow Pits (Numbers Area).

Transmission Lines and Substations

A 69-kV transmission line would be constructed from the existing Mooney Basin substation to the Winrock and South Poker Flats process areas. The proposed transmission line, approximately 21,505 feet long, would be constructed adjacent to the existing White Pine County Road 3 (Long Valley Road), with an associated 25-foot-wide disturbance corridor. Portions of the transmission line would be constructed on existing or authorized disturbance attributed to other mine components. For maintenance activities, the transmission line may be accessed from various points along White Pine County Road 3, which would result in minor surface disturbance.

Transmission line design parameters and electrical power provider information would be the same as those discussed in Section 2.4.1.4, Transmission Lines and Substations (Redbird and Rat Areas).

Communication Sites

No existing/authorized or proposed communication sites are located or proposed for development within the proposed Winrock Area.

Water Supply

The estimated groundwater pumping required for the project is described in Section 3.3.2 and the locations of the water supply wells are shown on **Figure 3.3-14**. Water supply wells that would be used for groundwater production are listed in **Table 3.3-8**, and water pumping requirements are summarized in **Table 3.3-9** and illustrated in **Figure 3.3-15**.

Fences

Fencing specifications would be consistent with those described in Section 2.4.1.3, Fences (Numbers Area).

Ancillary Areas and Yards

Ancillary and support facilities may be constructed within the process disturbance areas located adjacent to the proposed Winrock HLF. Ancillary and support facilities may include, but are not be limited to the following: pipelines, transmission lines, potable water storage tanks, freshwater storage tanks, storage buildings, and fuel/lube skids. Although a patchwork of undisturbed vegetation may remain in these disturbed areas during operations, Barrick would bond for the entire ancillary disturbance area.

Buildings

Process buildings would be located adjacent to the proposed ponds within the proposed Winrock process area. The process buildings would be similar to existing, operating process buildings located at Mooney Basin.

Proposed Water Management

Pit Dewatering

A hydrological investigation outlining baseline hydrological data and groundwater model results was conducted within the proposed NOA project and summarized within the PoO (Appendix E) (Barrick 2012a). This study indicated the depth of the proposed Winrock Main, North, and South pits would not intercept groundwater.

Storm Water Management

Storm water would be managed in accordance with the SWPPP (NOA PoO, Appendix I) (Barrick 2012a). Storm water controls for construction, maintenance, and monitoring practices within the proposed NOA project would be consistent with those described in Section 2.4.1.3, Storm Water Management (Numbers Area).

2.4.1.7 Little Bald Mountain Area

The following section outlines the development, reconfiguration, and/or expansion of each facility located within the proposed LBM Area within the proposed NOA project under the Proposed Action. In summary, Barrick proposes to amend its existing NOA PoO to conduct the following activities within the proposed LBM Area:

- Reconfigure the existing/authorized LBM RDA 1 and LBM RDA 2 to accommodate the development of the proposed LBM HLF;
- Develop the proposed LBM HLF and associated process facilities, solution ponds, and storm water ponds; and
- Expand and develop interpit, haul road, access road, and ancillary and support facility infrastructure, as detailed below.

Figures 2.4-1 and **2.4-2** illustrate the existing/authorized and proposed new disturbances and life-of-mine (full build-out), respectively, for the proposed LBM Area under the Proposed Action. **Table 2.4-1** summarizes the existing/authorized and proposed surface disturbances for the proposed LBM Area under the Proposed Action.

Proposed Open Pits

No additional open pit mining or facility reconfiguration and/or expansion are anticipated at the existing/authorized LBM Pit within the LBM Area.

Proposed Rock Disposal Areas

Two existing/authorized RDAs (i.e., LBM RDA 1 and LBM RDA 2) would be reconfigured to accommodate the proposed development of the LBM HLF within the proposed LBM Area.

The percentage of PAG material for each RDA was determined based on the proposed NOA project mine plan. **Table 2.4-22** summarizes ABA average values within the proposed LBM Area.

Table 2.4-22 North Operations Area Project Static Acid-base Accounting Average Values – Little Bald Mountain Area[1]

Proposed Mine Area	Waste Rock Material (MT)[2]	Average Acid Neutralizing Potential (kg/t)	Average Acid Generating Potential (kg/t)	Average Net Neutralizing Potential (APN) (kg/t)	Neutralizing Potential Ratio (NPR)
LBM	25	612	2.5	+629.5	252.8

[1] By definition, ANP and NNP are the kg of calcium carbonate per metric ton of rock and have maximum values of 1,000. Similarly, AGP is the kg of sulfur per metric ton of rock and has a maximum value of 1,000. Higher ANP, NNP, NPR and lower AGP values are favorable and indicate a reduced likelihood for acid drainage. NNP values of 0 or less are considered PAG material.

[2] Values have been rounded to the nearest whole integer.

Source: Barrick 2013.

Little Bald Mountain RDAs 1 and 2

The proposed LBM RDA 1 and LBM RDA 2 would be reconfigured to accommodate the proposed LBM HLF. The proposed LBM RDA 1 would be expanded to the east and the proposed LBM RDA 2 would be expanded to the west. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the LBM Area contains approximately 99 percent carbonate-rich waste with an average NNP of 629.5 kg/t and a NPR of 252.8 (Barrick 2012a).

Table 2.4-23 summarizes proposed RDA height and capacity parameters, and originating source of waste rock material within the proposed LBM Area.

Table 2.4-23 North Operations Area Project Rock Disposal Area Design Parameters – Little Bald Mountain Area[1,2]

Rock Disposal Area	Height (ft)	Incremental Capacity (MT)[3]	Activity
LBM RDA 1	175	3	Reconfiguration only
LBM RDA 2	475	3	Reconfiguration only

[1] Surface disturbance acreages are provided in **Table 2.4-1**.

[2] Elevations were not provided because designs are preliminary and subject to change based on detailed mine planning, project economics, geotechnical considerations, and other engineering design considerations. The RDAs would be constructed within the proposed footprints with an approximate height above original ground surface as listed above.

[3] Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

Proposed Ore Processing Facilities

One HLF (i.e., LBM HLF) and associated process facilities, and solution and storm water ponds would be developed within the proposed LBM Area. New process ponds, carbon columns, and support facilities would be constructed adjacent to the proposed LBM HLF.

LBM HLF

The proposed LBM HLF would be designed to accommodate leach material from the LBM Pit and the Top Pit Complex. The existing reclaimed LBM HLF would be removed and restacked on the proposed HLF. The removal and disposal of the existing HLF liners would be determined on a case-by-case basis in consultation with the State of Nevada.

Table 2.4-24 summarizes proposed HLF height and capacity parameters within the proposed LBM Area.

Table 2.4-24 North Operations Area Project Heap Leach Facility Design Parameters – Little Bald Mountain Area[1]

Heap Leach Facility	Heap Height (ft)	Incremental Capacity (MT)[2]
LBM	250	84

[1] Surface disturbance acreages are provided in **Table 2.4-1**.

[2] Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

Table 2.4-25 summarizes the conceptual pond design parameters within the proposed LBM Area.

Table 2.4-25 North Operations Area Project Conceptual Pond Design Parameters – Little Bald Mountain

Pond	100-year, 24-hour Storm Event (inches)[1]	Pond Depth (ft)	Operating Capacity (million gallons)
LBM Process	3.46	22	25.2
LBM Storm Water/Event	3.46	20	13.7

[1] Storm event source data from the NOAA Atlas 14, Volume 1, Version 5 (2011).

Source: Barrick 2012a.

Proposed Interpit Areas, Haul Roads, and Access Roads

The following proposed interpit areas, haul roads, and access roads would be developed and/or expanded in support of various facilities within the proposed LBM Area.

Interpit Areas

Per existing permit authorizations, Barrick would continue the use of the existing/authorized interpit areas within the proposed LBM Area, as well as developing additional interpit areas within the proposed LBM Area. Interpit specifications including permitting and operational use would be consistent with those described in Section 2.4.1.4, Interpit Areas (Redbird and Rat Areas).

Haul Roads

Per existing permit authorizations, Barrick would continue the use of the existing/authorized haul roads within the proposed LBM Area. Authorized haul roads within the proposed LBM Area would be realigned to accommodate the proposed LBM HLF. A new haul road would be constructed along the east side of the proposed LBM HLF to access the process area. Haul road, haul road berm, temporary ramp, and secondary road design parameters would be the same as those discussed in Section 2.4.1.4, Haul Roads (Redbird and Rat Areas).

Access Roads to Monitoring Wells, Water Wells, and Piezometers

Per existing permit authorizations, no monitoring well or piezometer sites are located within the proposed LBM Area. No proposed monitoring well or piezometer sites would be developed; therefore, no additional access roads would be required.

Public Access Roads

Per existing permit authorizations, Barrick would restrict public access to the existing roads that cross active mining areas per MSHA requirements. Public access would be controlled with fences and locked gates or other physical methods. **Figure 2.4-6** illustrates public access roads and possible traffic control points which would provide monitored access within the proposed NOA. Traffic management practices would be the same as those discussed in Section 2.4.1.3, Public Access Roads (Numbers Area).

Proposed Ancillary and Support Facilities

The following proposed ancillary and support facilities, including GMSs, transmission lines, water supply, fences, ancillary areas and yards and buildings would be developed, reconfigured, or expanded within the proposed LBM Area.

Growth Media Stockpiles

GMSs would be developed adjacent to the LBM HLF, LBM RDA 1, and LBM RDA 2. Growth media stockpiling would be the same as described in Section 2.4.1.4, Growth Media Stockpiles (Redbird and Rat Areas).

Borrow Pits

There are no proposed designated borrow pit locations for the proposed NOA project; however, Barrick anticipates continuing the current practice of developing borrow areas from authorized disturbance areas, where the appropriate material is available. Borrow pit materials and the development of a crusher and screening plant would be the same as those described in Section 2.4.1.3, Borrow Pits (Numbers Area).

Transmission Lines and Substations

A 24.9-kV transmission line would be constructed from the existing/authorized substation located southeast of the Top Pit Complex to the proposed LBM process area. The proposed transmission line, approximately 14,240 feet long, would be constructed adjacent to the existing/authorized Sage Flats Haul Road and along the east side of the proposed LBM HLF. The associated disturbance corridor would be approximately 25 feet wide. Portions of the proposed transmission line would be constructed on existing, authorized, or proposed disturbance attributed to other mine components. For maintenance

activities, the transmission line may be accessed from various points along the haul roads, which would result in minor surface disturbance.

A 24.9-kV transmission line would be constructed from the existing Sage Flats transformer located at the Top Pit Complex to the existing LBM communication sites previously authorized under a BLM ROW. The power line would be approximately 4,290 feet long, and the associated disturbance corridor would be approximately 25 feet wide, which includes access and maintenance road disturbance of approximately 15 feet wide.

Transmission line design parameters and electrical power provider information would be the same as those discussed in Section 2.4.1.4, Transmission Lines and Substations (Redbird and Rat Areas).

Communication Sites

To continue establishing a communication system throughout the proposed NOA project, Barrick would construct additional radio tower sites. Radio tower site design parameters would be the same as those discussed in Section 2.4.1.3, Communication Sites (Numbers Area).

Existing LBM communication sites (towers A, B, C, and D) which have been previously authorized under a BLM ROW would be included within the proposed NOA PoO boundary. Details associated with this communication site are presented under the No Action Alternative.

Water Supply

The estimated groundwater pumping required for the project is described in Section 3.3.2 and the locations of the water supply wells are shown on **Figure 3.3-14**. Water supply wells that would be used for groundwater production are listed in **Table 3.3-8**, and water pumping requirements are summarized in **Table 3.3-9** and illustrated in **Figure 3.3-15**.

To ensure adequate water supply for process and dust suppression in the LBM Area, a proposed water pipeline would be established from approved and/or proposed wells. Within the proposed LBM Area, the proposed water pipeline would be constructed along the eastern and southern extents of the proposed LBM HLF. Where possible, the pipelines would be established within existing/authorized or proposed disturbance footprints of other facilities. Storage tanks, booster pumps, pump houses, generators, and other power infrastructure would be installed pending detailed pumping and pipeline design. Portions of the pipelines may be buried.

Fences

Fencing specifications would be consistent with those described in Section 2.4.1.3, Fences (Numbers Area).

Ancillary Areas and Yards

An ancillary disturbance area would be developed adjacent to the proposed LBM HLF to be utilized for storm water controls and freshwater wells. Other miscellaneous support facilities necessary for an active mining operation may be located within the ancillary disturbance areas. Although a patchwork of undisturbed vegetation may remain in these disturbed areas during operations, Barrick would bond for the entire ancillary disturbance area.

Buildings

Process buildings would be located adjacent to the proposed ponds in the proposed LBM process area. The process buildings would be similar to existing, operating process buildings located at Mooney Basin.

A 100,000-gallon water tank would be located at the Top Ready Line to provide the following: 1) water storage from Top Pit Complex; and 2) a water source for dust control, drilling, or heap leach activities at the LBM HLF. Additional water storage tanks would be placed near the proposed Top Pit wells, near the LBM HLF, or at other locations as determined by engineering design, if necessary. Other support buildings which may include, but are not limited to, storage buildings and freshwater well sheds would be constructed as necessary to support active mining operations.

Proposed Water Management

Pit Dewatering

A hydrological investigation outlining baseline hydrological data and groundwater model results was conducted within the proposed NOA project and summarized within the PoO (Appendix E) (Barrick 2012a). No additional mining or expansion of the LBM open pit is proposed.

Storm Water Management

Storm water would be managed in accordance with the SWPPP (NOA PoO, Appendix I) (Barrick 2012a). Storm water controls for construction, maintenance, and monitoring practices within the proposed NOA project would be consistent with those described in Section 2.4.1.3, Storm Water Management (Numbers Area).

2.4.1.8 Royale Area

The following section outlines the development, reconfiguration, and/or expansion of each facility located within the Royale Area within the proposed NOA project under the Proposed Action. In summary, Barrick proposes to amend its existing NOA PoO to conduct the following activities within the proposed Royale Area:

- Develop the proposed Royale Pit;
- Develop the proposed Royale North and Royale South RDAs; and
- Expand and develop interpit, haul road, access road, and ancillary and support facility infrastructure, as detailed below.

Figures 2.4-1 and **2.4-2** illustrate the proposed new disturbances and life-of-mine (full build-out), respectively, for the proposed Royale Area under the Proposed Action. **Table 2.4-1** summarizes the existing/authorized and proposed surface disturbances for the proposed Royale Area under the Proposed Action.

Proposed Open Pits

The proposed Royale Pit would be expanded within the proposed Royale Area as described below.

Royale Pit

The proposed Royale Pit would merge and expand the following pits: White Pine Pit 1, White Pine Pit 2, White Pine Pit 3, and White Pine Pit 4. The existing open pits have been reclaimed, with all permit requirements fulfilled. The proposed Royale Pit would remove portions of the following RDAs, which have been reclaimed, with all permit requirements fulfilled: White Pine NW, White Pine NE, White Pine West, and White Pine East. A detailed comparison between the existing, reclaimed, and released facilities versus the proposed pit configuration is presented in the NOA PoO (Figure 6) (Barrick 2012a).

Leach material would be hauled to the proposed Winrock, North Poker Flats, or South Poker Flats HLFs; waste rock material would be hauled to the proposed North Royale and South Royale RDAs.

Table 2.4-26 summarizes the proposed open pit design parameters within the proposed Royale Area including slope, dimension, and pit bottom elevation. **Table 2.4-27** summarizes anticipated/estimated leach material and waste rock material production quantity within the proposed Royale Area.

Table 2.4-26 North Operations Area Project Open Pit Design Parameters – Royale Area[1]

Proposed Open Pit	Slope (degrees)	Length (ft)	Width (ft)	Depth (ft)	Pit Bottom Elevation (ft amsl)
Royale	40 – 50	4,230	2,780	960	6,125

[1] Surface disturbance acreages are provided in **Table 2.4-1**.

Source: Barrick 2012a.

Table 2.4-27 North Operations Area Project Estimated Ore and Waste Rock Tonnages – Royale Area[1]

Proposed Open Pit	Leach Material (MT)	Waste Rock Material (MT)	Total (MT)
Royale	16	48	64
Total	**16**	**48**	**64**

[1] Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

Proposed Rock Disposal Areas

Two RDAs (i.e., Royale North and Royale South) would be developed within the proposed Royale Area (former White Pine Mine Area).

The percentage of PAG material for each RDA was determined based on the proposed NOA project mine plan. **Table 2.4-28** summarizes ABA average values within the proposed Royale Area.

Table 2.4-28 North Operations Area Project Static Acid-base Accounting Average Values – Royale Area[1]

Proposed Mine Area	Waste Rock Material (MT)[2]	Average Acid Neutralizing Potential (kg/t)	Average Acid Generating Potential (kg/t)	Average Net Neutralizing Potential (APN) (kg/t)	Neutralizing Potential Ratio (NPR)
Royale	48	319	21.8	+297.2	14.63

[1] By definition, ANP and NNP are the kg of calcium carbonate per metric ton of rock and have maximum values of 1,000. Similarly, AGP is the kg of sulfur per metric ton of rock and has a maximum value of 1,000. Higher ANP, NNP, NPR and lower AGP values are favorable and indicate a reduced likelihood for acid drainage. NNP values of 0 or less are considered PAG material.

[2] Values have been rounded to the nearest whole integer.

Source: Barrick 2013.

Royale North and Royale South RDAs

The proposed Royale North and South RDAs would be constructed to accommodate waste rock material from the proposed Royale Pit. The proposed RDAs would cover portions of the reclaimed and released White Pine RDAs that would remain after the mining of the proposed Royale Pit. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the Royale area contains 92.1 percent carbonate-rich waste with an average NNP of 297.2 kg/t and a NPR of 14.63 (Barrick 2012a).

Table 2.4-29 summarizes proposed RDA height and capacity parameters, and originating source of waste rock material within the proposed Royale Area.

Table 2.4-29 North Operations Area Project Rock Disposal Area Design Parameters – Royale Area[1,2]

Rock Disposal Area	Height (ft)	Incremental Capacity (MT)[3]	Source of Waste Rock Material
Royale North	425	46	Royale Pit
Royale South	300	14	Royale Pit

[1] Surface disturbance acreages are provided in **Table 2.4-1**.

[2] Elevations were not provided because designs are preliminary and subject to change based on detailed mine planning, project economics, geotechnical considerations, and other engineering design considerations. The RDAs would be constructed within the proposed footprints with an approximate height above original ground surface as listed above.

[3] Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

Proposed Ore Processing Facilities

No additional development of new ore processing facilities or reconfiguration and/or expansion of existing/authorized ore processing facilities are anticipated within the proposed Royale Area.

Proposed Interpit Areas, Haul Roads, and Access Roads

The following proposed interpit areas, haul roads, and access roads would be developed and/or expanded in support of various facilities within the proposed Royale Area. Typical in-pit haul road cross-sections are presented as a component of the open pit typical within the NOA PoO (Figure 2) (Barrick 2012a).

Interpit Areas

Interpit areas would be developed adjacent to the Royale Pit within the proposed Royale Area. Interpit specifications including permitting and operational use would be consistent with those described in Section 2.4.1.4, Interpit Areas (Redbird and Rat Areas).

Haul Roads

A haul road from the Galaxy RDA area would be constructed roughly parallel to and along the west side of the existing White Pine County Road 3 (Long Valley Road) to connect the proposed Royale facilities with the existing BMM and Mooney Basin operations. Haul road, haul road berm, temporary ramp, and secondary road design parameters would be the same as those discussed in Section 2.4.1.4, Haul Roads (Redbird and Rat Areas).

Access Roads to Monitoring Wells, Water Wells, and Piezometers

Per existing permit authorizations, Barrick would continue to the use of existing access roads to the existing/authorized water well site within the Royale Area.

Public Access Roads

Per existing permit authorizations, Barrick would restrict public access to the existing roads that cross active mining areas per MSHA requirements. Public access would be controlled with fences and locked gates or other physical methods. **Figure 2.4-6** illustrates public access roads and possible traffic control points which would provide monitored access within the proposed NOA. Traffic management practices would be the same as those discussed in Section 2.4.1.3, Public Access Roads (Numbers Area).

Proposed Ancillary and Support Facilities

The following proposed ancillary and support facilities, including GMSs, transmission lines, water supply, fences, ancillary areas and yards and buildings would be developed within the proposed Royale Area.

Growth Media Stockpiles

GMSs would be developed adjacent to the proposed Royale North and South RDAs. Growth media stockpiling would be the same as described in Section 2.4.1.4, Growth Media Stockpiles (Redbird and Rat Areas).

Borrow Pits

There are no proposed designated borrow pit locations for the proposed NOA project; however, Barrick anticipates continuing the current practice of developing borrow areas from authorized disturbance areas, where the appropriate material is available. Borrow pit materials and the development of a crusher and screening plant would be the same as those described in Section 2.4.1.3, Borrow Pits (Numbers Area).

Transmission Lines and Substations

No existing/authorized or proposed transmission lines, substations, transformer upgrades or expansions are located or proposed for development within the proposed Royale Area.

Communication Sites

No existing/authorized or proposed communication sites are located or proposed for development within the proposed Royale Area.

Water Supply

The estimated groundwater pumping required for the project is described in Section 3.3.2 and the locations of the water supply wells are shown on **Figure 3.3-14**. Water supply wells that would be used for groundwater production are listed in **Table 3.3-8**, and water pumping requirements are summarized in **Table 3.3-9** and illustrated in **Figure 3.3-15**.

Fences

Fencing specifications would be consistent with those described in Section 2.4.1.3, Fences (Numbers Area).

Ancillary Areas and Yards

No existing/authorized or proposed ancillary areas or yards are located or proposed for development within the proposed Royale Area.

Buildings

No existing/authorized or proposed buildings are located or proposed for development within the proposed Royale Area.

Proposed Water Management

Pit Dewatering

A hydrological investigation outlining baseline hydrological data and groundwater model results was conducted within the proposed NOA project and summarized within the PoO (Appendix E) (Barrick 2012a). In summary, the depth of the proposed Royale Pit would come to within 16 to 19 feet of the top of the groundwater table, but would not intercept groundwater.

Storm Water Management

Storm water would be managed in accordance with the SWPPP (NOA PoO, Appendix I) (Barrick 2012a). Storm water controls for construction, maintenance, and monitoring practices within the proposed NOA project would be consistent with those described in Section 2.4.1.3, Storm Water Management (Numbers Area).

The proposed RDA footprints within the proposed Royale Area include a buffer zone adequate for storm water diversion installation. Such storm water control structures may include, but are not limited to, culverts, diversion ditches, containment structures, and catchment basins. Additional storm water and erosion control features would be developed as necessary utilizing the BMPs as outlined in the SWPPP. To properly operate and maintain the facilities and systems of treatment and control of storm water management, Barrick would conduct visual inspections of the facilities and employ proper maintenance and operations on structural and erosional controls. Construction, maintenance, and inspection practices for storm water controls are discussed in the SWPPP.

2.4.1.9 Casino Area

The following section outlines the development, reconfiguration, and/or expansion of each facility located within the proposed Casino Area within the proposed NOA project under the Proposed Action. In summary, Barrick proposes to amend its existing NOA PoO to conduct the following activities within the proposed Casino Area:

- Expand the existing/authorized Keno Pit to form the proposed Casino Pit;
- Develop the proposed Casino North RDA;
- Expand the existing/authorized Casino RDA to form the proposed Casino South RDA; and
- Expand and develop interpit, haul road, access road, and ancillary and support facility infrastructure, as detailed below.

Figures 2.4-1 and **2.4-2** illustrate the existing/authorized and proposed new disturbances and life-of-mine (full build-out), respectively, for the proposed Casino Area under the Proposed Action. **Table 2.4-1** summarizes the existing/authorized and proposed surface disturbances for the proposed Casino Area under the Proposed Action.

Proposed Open Pits

The existing Keno Pit would be expanded to form the proposed Casino Pit within the proposed Casino Area.

Casino Pit

The proposed Casino Pit would include the expansion of the existing Keno Pit in each direction. Leach material would be hauled to the proposed North Poker Flats or South Poker Flats HLFs; waste rock material would be hauled to the Casino North and Casino South RDAs.

Table 2.4-30 summarizes the proposed open pit design parameters within the proposed Casino Area including slope, dimension, and pit bottom elevation. **Table 2.4-31** summarizes anticipated/estimated leach material and waste rock material production quantity within the proposed Casino Area.

Table 2.4-30 North Operations Area Project Open Pit Design Parameters – Casino Area[1]

Proposed Open Pit	Slope (degrees)	Length (ft)	Width (ft)	Depth (ft)	Pit Bottom Elevation (ft amsl)
Casino Pit	40 – 50	3,160	1,660	600	6,775

[1] Surface disturbance acreages are provided in **Table 2.4-1**.

Source: Barrick 2012a.

Table 2.4-31 North Operations Area Project Estimated Ore and Waste Rock Tonnages – Casino Area[1]

Proposed Open Pit	Leach Material (MT)	Waste Rock Material (MT)	Total (MT)
Casino	6	17	23
Total	**6**	**17**	**23**

[1] Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

Proposed Rock Disposal Areas

One existing RDA (i.e., former Casino RDA) would be expanded to form the proposed Casino South RDA, and one new RDA (i.e., Casino North RDA) would be developed within the proposed Casino Area.

The percentage of PAG material for each RDA was determined based on the proposed NOA project mine plan. **Table 2.4-32** summarizes ABA average values within the proposed Casino Area.

Table 2.4-32 North Operations Area Project Static Acid-base Accounting Average Values – Casino Area[1]

Proposed Mine Area	Waste Rock Material (MT)[2]	Average Acid Neutralizing Potential (kg/t)	Average Acid Generating Potential (kg/t)	Average Net Neutralizing Potential (APN) (kg/t)	Neutralizing Potential Ratio (NPR)
Casino	17	319	21.8	+297.2	14.63

[1] By definition, ANP and NNP are the kg of calcium carbonate per metric ton of rock and have maximum values of 1,000. Similarly, AGP is the kg of sulfur per metric ton of rock and has a maximum value of 1,000. Higher ANP, NNP, NPR and lower AGP values are favorable and indicate a reduced likelihood for acid drainage. NNP values of 0 or less are considered PAG material.

[2] Values have been rounded to the nearest whole integer.

Source: Barrick 2013.

Casino North and Casino South RDAs

The proposed Casino North RDA would be constructed to the northeast of the Casino Pit. The existing Casino RDA, which is currently in reclamation monitoring, would be expanded to the southwest to form the Casino South RDA. Waste rock from the Casino Pit would be transferred to both the Casino North and Casino South RDAs. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the Casino area contains 92.1 percent carbonate-rich waste with an average NNP of 297.2 kg/t and a NPR of 14.63 (Barrick 2012a).

Table 2.4-33 summarizes proposed RDA height and capacity parameters, and originating source of waste rock material within the proposed Casino Area.

Table 2.4-33 North Operations Area Project Rock Disposal Area Design Parameters – Casino Area[1,2]

Rock Disposal Area	Height (ft)	Incremental Capacity (MT)[3]	Source of Waste Rock Material
Casino North	200	11	Casino Pit, Figure 7
Casino South	200	10	Casino Pit, Figure 7

[1] Surface disturbance acreages are provided in **Table 2.4-1**.

[2] Elevations were not provided because designs are preliminary and subject to change based on detailed mine planning, project economics, geotechnical considerations, and other engineering design considerations. The RDAs would be constructed within the proposed footprints with an approximate height above original ground surface as listed above.

[3] Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

Proposed Ore Processing Facilities

No additional development of new ore processing facilities or reconfiguration and/or expansion of existing/authorized ore processing facilities are anticipated within the proposed Casino Area.

Proposed Interpit Areas, Haul Roads, and Access Roads

The following proposed interpit areas, haul roads, and access roads would be developed and/or expanded in support of various facilities within the proposed Casino Area. Typical in-pit haul road cross-sections are presented as a component of the open pit typical within the NOA PoO (Figure 2) (Barrick 2012a).

Interpit Areas

Interpit areas would be developed adjacent to the open pit and RDAs within the proposed Casino Area. Interpit specifications including permitting and operational use would be consistent with those described in Section 2.4.1.4, Interpit Areas (Redbird and Rat Areas).

Haul Roads

Haul roads would be developed within the proposed Casino Area. A haul road from the Galaxy RDA area would be constructed roughly parallel to and along the west side of the existing White Pine County Road 3 (Long Valley Road) to connect the proposed Royale facilities with the existing BMM and Mooney Basin operations. Other haul roads would connect to this northerly route to access the Casino mine components. Haul road, haul road berm, temporary ramp, and secondary road design parameters would be the same as those discussed in Section 2.4.1.4, Haul Roads (Redbird and Rat Areas).

Haul road, haul road berm, temporary ramp, and secondary road design parameters would be the same as those discussed in Section 2.4.1.4, Haul Roads (Redbird and Rat Areas).

Access Roads to Monitoring Wells, Water Wells, and Piezometers

No existing/authorized or proposed access roads are located or proposed for development within the proposed Casino Area.

Access roads to proposed piezometer site would be developed within the proposed Casino Area.

Public Access Roads

Per existing authorizations, Barrick would restrict public access to the existing roads that cross active mining areas per MSHA requirements. Public access would be controlled with fences and locked gates or other physical methods. **Figure 2.4-6** illustrates public access roads and possible traffic control points which would provide monitored access within the proposed NOA. Traffic management practices would be the same as those discussed in Section 2.4.1.3, Public Access Roads (Numbers Area).

Proposed Ancillary and Support Facilities

The following proposed ancillary and support facilities, including GMSs, transmission lines, water supply, fences, ancillary areas and yards and buildings would be developed within the proposed Casino Area.

Growth Media Stockpiles

GMSs would be developed adjacent to the proposed Casino North and Casino South RDAs. Growth media stockpiling would be the same as described in Section 2.4.1.4, Growth Media Stockpiles (Redbird and Rat Areas).

Borrow Pits

There are no proposed designated borrow pit locations for the proposed NOA project; however, Barrick anticipates continuing the current practice of developing borrow areas from authorized disturbance areas, where the appropriate material is available. Borrow pit materials and the development of a crusher and screening plant would be the same as those described in Section 2.4.1.3, Borrow Pits (Numbers Area).

Transmission Lines and Substations

No existing/authorized or proposed transmission lines, substations, transformer upgrades or expansions are located or proposed for development within the proposed Casino Area.

Communication Sites

No existing/authorized or proposed communication sites are located or proposed for development within the proposed Casino Area.

Water Supply

The estimated groundwater pumping required for the project is described in Section 3.3.2 and the locations of the water supply wells are shown on **Figure 3.3-14**. Water supply wells that would be used for groundwater production are listed in **Table 3.3-8**, and water pumping requirements are summarized in **Table 3.3-9** and illustrated in **Figure 3.3-15**.

Fences

Fencing specifications would be consistent with those described in Section 2.4.1.3, Fences (Numbers Area).

Ancillary Areas and Yards

No existing/authorized or proposed ancillary areas or yards are located or proposed for development within the proposed Casino Area.

Buildings

No existing/authorized or proposed buildings are located or proposed for development within the proposed Casino Area.

Proposed Water Management

Pit Dewatering

A hydrological investigation outlining baseline hydrological data and groundwater model results was conducted within the proposed NOA project and summarized within the PoO (Appendix E) (Barrick 2012a). In summary, the depth of the proposed Casino Pit would not intercept groundwater.

Storm Water Management

Storm water would be managed in accordance with the SWPPP (NOA PoO, Appendix I) (Barrick 2012a). Storm water controls for construction, maintenance, and monitoring practices within the proposed NOA project would be consistent with those described in Section 2.4.1.3, Storm Water Management (Numbers Area).

The proposed RDA footprints within the proposed Casino Area include a buffer zone adequate for storm water diversion installation. Such storm water control structures may include, but are not limited to, culverts, diversion ditches, containment structures, and catchment basins. Additional storm water and erosion control features would be developed as necessary utilizing the BMPs as outlined in the SWPPP. To properly operate and maintain the facilities and systems of treatment and control of storm water management, Barrick would conduct visual inspections of the facilities and employ proper maintenance and operations on structural and erosional controls. Construction, maintenance, and inspection practices for storm water controls are discussed in the SWPPP (NOA PoO, Appendix I) (Barrick 2012a).

2.4.1.10 Mooney Basin and Galaxy Areas

The following section outlines the development, reconfiguration, and/or expansion of each facility located within the proposed Mooney Basin and Galaxy areas within the proposed NOA. In summary, Barrick proposes to amend its existing NOA PoO to conduct the following activities within the proposed Mooney Basin and Galaxy areas:

- Expand the existing/authorized East Bida Pit to form the proposed Bida Pit;
- Reconfigure the existing/authorized Belmont RDA to accommodate the proposed Bida Pit;
- Develop the proposed Belmont South RDA;
- Expand and develop interpit, haul road, access road, and ancillary and support facility infrastructure, as detailed below; and
- Develop a solution pipeline in existing disturbance between the existing Mooney HLF and the proposed Poker Flats HLF areas.

Figures 2.4-1 and **2.4-2** illustrate the existing/authorized and proposed new disturbances and life-of-mine (full build-out), respectively, for the proposed Mooney Basin and Galaxy areas under the Proposed Action. **Table 2.4-1** summarizes the existing/authorized and proposed surface disturbances for the proposed Mooney Basin and Galaxy areas under the Proposed Action.

<u>Proposed Open Pits</u>

One existing open pit (i.e., East Bida Pit) would be expanded to form the proposed Bida Pit within the proposed Mooney Basin and Galaxy areas. No additional open pit mining or facility reconfiguration and/or expansion are anticipated at the existing/authorized Galaxy or Horseshoe pits within the proposed Mooney Basin and Galaxy areas.

Bida Pit

The East Bida Pit would be expanded to the south to form the proposed Bida Pit. The proposed Bida Pit removes the authorized Belmont Pit 2 as well as a portion of the authorized Belmont Pit 1 and Belmont RDA. Leach material from the proposed Bida Pit would be hauled to the existing/authorized Mooney HLFs; waste rock material would be hauled to the reconfigured Belmont RDA or the proposed Belmont South RDA.

The existing/authorized Belmont Pit 1 would be backfilled with approximately 0.6 MT of carbonate-rich waste rock from the proposed Bida Pit, and the Belmont RDA would be constructed above the pre-mining Belmont Pit 1 topography. The previously authorized Belmont Pit 3 surface disturbance would be re-categorized as Belmont South RDA. Proposed changes to the previously authorized Belmont Pits are illustrated in detail within the NOA PoO (Figure 10) (Barrick 2012a).

Table 2.4-34 summarizes the proposed open pit design parameters within the proposed Mooney Basin and Galaxy areas including slope, dimension, and pit bottom elevation. **Table 2.4-35** summarizes anticipated/estimated leach material and waste rock material production quantity within the proposed Mooney Basin and Galaxy areas.

Table 2.4-34 North Operations Area Project Open Pit Design Parameters – Mooney Basin and Galaxy Areas[1]

Proposed Open Pit	Slope (degrees)	Length (ft)	Width (ft)	Depth (ft)	Pit Bottom Elevation (ft amsl)
Bida	45 – 55	3,595	2,030	625	6,975

[1] Surface disturbance acreages are provided in **Table 2.4-1**.

Source: Barrick 2012a.

Table 2.4-35 North Operations Area Project Estimated Ore and Waste Rock Tonnages – Mooney Basin and Galaxy Areas[1]

Proposed Open Pit	Leach Material (MT)	Waste Rock Material (MT)	Total (MT)
Bida	4	5	9
Total	**4**	**5**	**9**

[1] Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

Proposed Rock Disposal Areas

One existing RDA (i.e., former Belmont RDA) would be reconfigured to accommodate the proposed Bida Pit, and one new RDA (i.e., Belmont South) would be developed within the proposed Mooney Basin and Galaxy areas. No facility reconfigurations and/or expansions are proposed at the existing Galaxy, Horseshoe, or Saga RDAs.

The percentage of PAG material for each RDA was determined based on the proposed NOA project mine plan. **Table 2.4-36** summarizes ABA average values within the proposed Mooney Basin and Galaxy areas.

Table 2.4-36 North Operations Area Project Static Acid-base Accounting Average Values – Mooney Basin and Galaxy Areas[1]

Proposed Mine Areas	Waste Rock Material (MT)[2]	Average Acid Neutralizing Potential (kg/t)	Average Acid Generating Potential (kg/t)	Average Net Neutralizing Potential (APN) (kg/t)	Neutralizing Potential Ratio (NPR)
Bida	5	182	15.7	+166.3	11.59

[1] By definition, ANP and NNP are the kg of calcium carbonate per metric ton of rock and have maximum values of 1,000. Similarly, AGP is the kg of sulfur per metric ton of rock and has a maximum value of 1,000. Higher ANP, NNP, NPR and lower AGP values are favorable and indicate a reduced likelihood for acid drainage. NNP values of 0 or less are considered PAG material.

[2] Values have been rounded to the nearest whole integer.

Source: Barrick 2013.

Belmont RDA and Belmont South RDA

The proposed Belmont RDA would be reconfigured to accommodate the proposed Bida Pit expansion. The Belmont Pit 1 would be backfilled with carbonate-rich material to the original ground surface, and the reconfigured Belmont RDA would be constructed above the original ground surface. The Belmont South RDA would be constructed in an area previously authorized for Belmont Pit 3 and associated interpit. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the Bida area contains 80.1 percent carbonate-rich waste with an average NNP of 166.3 kg/t and a NPR of 11.59 (Barrick 2012a).

Table 2.4-37 summarizes proposed RDA height and capacity parameters, and originating source of waste rock material within the proposed Mooney Basin and Galaxy areas.

Table 2.4-37 North Operations Area Project Rock Disposal Area Design Parameters – Mooney Basin and Galaxy Areas[1,2]

Rock Disposal Area	Height (ft)	Incremental Capacity (MT)[3]	Source of Waste Rock Material
Belmont	200	0	Bida Pit
Belmont South	275	7	Bida Pit

[1] Surface disturbance acreages are provided in **Table 2.4-1**.

[2] Elevations were not provided because designs are preliminary and subject to change based on detailed mine planning, project economics, geotechnical considerations, and other engineering design considerations. The RDAs would be constructed within the proposed footprints with an approximate height above original ground surface as listed above.

[3] Values have been rounded to the nearest whole integer.

Source: Barrick 2012a.

Proposed Ore Processing Facilities

No additional development of new ore processing facilities or reconfiguration and/or expansion of existing/authorized ore processing facilities are anticipated within the proposed Mooney Basin and Galaxy areas.

Proposed Interpit Areas, Haul Roads, and Access Roads

The following proposed interpit areas, haul roads, and access roads would be developed and/or expanded in support of various facilities within the proposed Mooney Basin and Galaxy areas. Typical in-pit haul road cross-sections are presented as a component of the open pit typical within the NOA PoO (Figure 3) (Barrick 2012a).

Interpit Areas

Per existing permit authorizations, Barrick would continue the use of the existing interpit areas within the proposed Mooney Basin and Galaxy areas. Additional interpit areas would be developed within the proposed Mooney Basin and Galaxy areas. Interpit specifications including permitting and operational use would be consistent with those described in Section 2.4.1.4, Interpit Areas (Redbird and Rat Areas).

Haul Roads

Per existing permit authorizations, Barrick would continue the use of the existing haul roads within the proposed Mooney Basin and Galaxy areas. Additional haul roads would be developed within the proposed Mooney Basin and Galaxy areas. A haul road from the Galaxy RDA area would be constructed

roughly parallel to and along the west side of the existing White Pine County Road 3 (Long Valley Road) to connect the proposed Royale facilities with the existing BMM and Mooney Basin operations.

Haul road, haul road berm, temporary ramp, and secondary road design parameters would be the same as those discussed in Section 2.4.1.4, Haul Roads (Redbird and Rat Areas).

Access Roads to Monitoring Wells, Water Wells, and Piezometers

Per existing permit authorizations, Barrick would continue to the use of existing access roads to the existing/authorized monitoring well, water well, and piezometer sites. No proposed monitoring well or piezometer sites would be developed; therefore, the development of additional access roads is not anticipated.

Public Access Roads

Per existing permit authorizations, Barrick would restrict public access to the existing roads that cross active mining areas per MSHA requirements. Public access would be controlled with fences and locked gates or other physical methods. **Figure 2.4-6** illustrates public access roads and possible traffic control points which would provide monitored access within the proposed NOA. Traffic management practices would be the same as those discussed in Section 2.4.1.3, Public Access Roads (Numbers Area).

Proposed Ancillary and Support Facilities

The following proposed ancillary and support facilities, including GMSs, transmission lines, water supply, fences, ancillary areas and yards and buildings would be developed, reconfigured, or expanded within the proposed Mooney Basin and Galaxy areas. Per existing permit authorizations, Barrick would continue the use of existing ancillary and support facilities within the proposed Mooney Basin and Galaxy areas.

Growth Media Stockpiles

Per existing permit authorizations, Barrick would continue the use of existing GMSs located throughout the proposed Mooney Basin Area. Additional GMSs would be developed within the Mooney Basin and Galaxy areas. Growth media stockpiling would be the same as described in Section 2.4.1.4, Growth Media Stockpiles (Redbird and Rat Areas).

Borrow Pits

There are no proposed designated borrow pit locations for the proposed NOA project; however, Barrick anticipates continuing the current practice of developing borrow areas from authorized disturbance areas, where the appropriate material is available. Borrow pit materials and the development of a crusher and screening plant would be the same as those described in Section 2.4.1.3, Borrow Pits (Numbers Area).

Transmission Lines and Substations

Per existing permit authorizations, Barrick would continue the use of its existing transmission lines located adjacent to the existing/authorized Mooney Basin facilities and Horseshoe Pit. A 69-kV transmission line would be constructed from the existing Mooney Basin substation to the Winrock and South Poker Flats process areas. The proposed transmission line, approximately 21,505 feet long, would be constructed adjacent to the existing White Pine County Road 3 (Long Valley Road), with an associated 25-foot-wide disturbance corridor. Portions of the transmission line would be constructed on existing or authorized disturbance attributed to other mine components. For maintenance activities, the transmission line may be accessed from various points along White Pine County Road 3, which would result in minor surface disturbance.

Transmission line design parameters and electrical power provider information would be the same as those discussed in Section 2.4.1.4, Transmission Lines and Substations (Redbird and Rat Areas).

Communication Sites

Per existing permit authorizations, Barrick would continue the use of its existing/authorized communication sites located throughout the proposed Mooney Basin Area. To continue establishing a communication system throughout the proposed NOA project, Barrick would construct additional radio tower sites. Radio tower site design parameters would be the same as those discussed in Section 2.4.1.3, Communication Sites (Numbers Area).

Water Supply

The estimated groundwater pumping required for the project is described in Section 3.3.2 and the locations of the water supply wells are shown on **Figure 3.3-14**. Water supply wells that would be used for groundwater production are listed in **Table 3.3-8**, and water pumping requirements are summarized in **Table 3.3-9** and illustrated in **Figure 3.3-15**.

To ensure adequate water supply for process and dust suppression in the LBM Area, a proposed water pipeline would be established from approved and/or proposed wells. Within the proposed Mooney Basin and Galaxy areas, the proposed water pipeline would be constructed north of the Mooney North HLF and extend to the west towards the LBM HLF, following the haul road between the Horseshoe and Bida pits. Where possible, the pipelines would be established within existing/ authorized or proposed disturbance footprints of other facilities. Storage tanks, booster pumps, pump houses, generators, and other power infrastructure would be installed pending detailed pumping and pipeline design. Portions of the pipelines may be buried.

Fences

Fencing specifications would be consistent with those described in Section 2.4.1.3, Fences (Numbers Area).

Ancillary Areas and Yards

Per existing permit authorizations, Barrick would continue the use of the existing ancillary area located within the proposed Mooney Basin Area. Additional ancillary disturbance includes the placement of a solution pipeline. The pipeline would extend between the Mooney HLF area and the Poker Flats HLF areas.

Buildings

Per existing permit authorizations, Barrick would continue the use of the existing process buildings located within the proposed Mooney Basin Area.

<u>Proposed Water Management</u>

Pit Dewatering

A hydrological investigation outlining baseline hydrological data and groundwater model results was conducted within the proposed NOA project and summarized within the PoO (Appendix E) (Barrick 2012a). In summary, the depth of the proposed open pits within the Mooney Basin and Galaxy areas would not intercept groundwater.

Storm Water Management

Storm water would be managed in accordance with the SWPPP (NOA PoO, Appendix I) (Barrick 2012a). Storm water controls for construction, maintenance, and monitoring practices within the proposed NOA

project would be consistent with those described in Section 2.4.1.3, Storm Water Management (Numbers Area).

2.4.1.11 Open Pit Mining Overview

Conventional open pit mining methods (i.e., truck and shovel/loader) would be used to excavate leach material and waste rock from the proposed open pits. The NOA project mining is expected to be begin by 2016 and the expected mine life is approximately 20 years. During that time period, mining would be conducted up to 24 hours per day and 365 days a year. Rock would be drilled and blasted for excavation using ammonium nitrate and fuel oil or other appropriate blasting agents as determined by rock characteristics. One blast per day is anticipated in each active pit and it is estimated that two or three pits would be active at any given time. It is estimated that total leach material production over the life of the mine would be approximately 198 MT (approximately 10 million tons per year [tpy]) (Barrick 2012a).

Open pits would be designed to extract minerals efficiently while maintaining safe mine operation practices. Consequently, safety needs, geology, and geotechnical conditions drive overall pit design. For the proposed NOA project, proposed pit design has been based on review of previous pit mining data, the results of geotechnical testing, and surface mining industry/MSHA standards (Barrick 2012a).

Overall pit slope angles would vary with pit location and the individual geotechnical and safety constraints of each pit. Slope angles for the proposed pit expansions would range from approximately 30 to 55 degrees (Barrick 2012a).

The proposed open pits would be mined with typical bench heights of approximately 25 to 40 feet. Final bench height would be determined by mining requirements and/or rock geotechnical properties. A catch bench on the rock slope to “catch” rocks so that they do not continue unhindered to the toe of the slope or away from the base of the rock cut, would be incorporated into the final bench design. Catch bench widths and intervals would vary by pit and would be dependent upon local geology and rock geotechnical properties. Catch bench intervals generally would be one to three bench heights. Typical open pit cross-sections are presented within the NOA PoO (Barrick 2012a).

Barrick would monitor pit wall stability throughout the active life of each open pit. Monitoring generally would include periodic surveying of pit wall surfaces to identify movement or deflection relative to benchmarks set outside the geotechnical influence of the pit. Open pit design would be refined as new information is collected to ensure safe operating conditions (Barrick 2012a).

<u>Proposed Drilling and Blasting</u>

Rock would be drilled and blasted for excavation using ammonium nitrate and fuel oil or other appropriate blasting agents, depending on rock characteristics. Explosives would be stored and used in accordance with MSHA and Bureau of Alcohol, Tobacco, and Firearm (BATF) regulations. Two or three pits would be active at a given time; one blast per day within each active open pit would be part of normal operations. The amount of explosives used in each blast would vary depending on the size of the working face of the open pit.

<u>Proposed Loading and Hauling</u>

Trucks would be used to haul leach material to the HLFs and waste rock material to the RDAs. Low-grade leach material may be temporarily stored in stockpiles or on a selected portion of the RDAs for later transport and processing. The existing NOA equipment fleet would be utilized to mine the proposed pit developments and expansions. A list of mining equipment for the BMM NOA is summarized within the *Final Environmental Impact Statement for the Bald Mountain Mine North Operations Area Project* (BLM 2009a).

2.4.1.12 Rock Disposal Area Overview

Haul trucks would deliver waste rock material from proposed mining operations and deposit in RDAs. The number of haul trucks would be increased by an estimated 20 to 30 percent over current numbers, although not all of trucks would be operating at the same time. Haul road traffic could increase by as much as 30 percent. RDAs would be constructed in a single lift by end-dumping from haul trucks, with the exception of the Winrock East and Winrock West RDAs and the LBM RDA 2, which would be constructed utilizing end dumping to place the material, and then each lift of 100 to 200 feet would be constructed using a lift/bench approach. New RDAs that exceed a height of 100 feet would be designed and built using a lift/bench approach where each lift would be approximately 100 to 200 feet. Bench setbacks would be sufficient to approximate post-mining configuration of approximately 2.5 horizontal (H):1 vertical (V) slopes while ensuring operational slope stability and long-term geomorphic stability. Benches generally would be completed by starting at the base of the slope and working upward. This method of benching from the bottom up and creating slopes that generally conform to ultimate regraded slope would reduce earthwork volumes required to complete final reclamation. Additionally, the steeper inter-bench slope angle would minimize water infiltration into the RDAs, increase run-off, and limit the potential to generate acid rock drainage by minimizing water contact with any incidental PAG material. In general, RDAs would be developed and constructed with sufficient bench setbacks to facilitate reclamation at closure. The final slope configuration may vary (2.5H:1V or shallower) based on underlying topography and waste rock characteristics, while leaving slight catch benches to aid in reducing surface water flow and velocities. The ultimate size of the RDA within the proposed footprints may vary due to proposed project economics. Typical RDA cross-sections are presented within the NOA PoO (Barrick 2012a).

Prior to construction, the proposed RDA footprints would be cleared of vegetation, and growth media would be salvaged and placed in proposed GMSs. Growth media includes salvaged material suitable to be used for covering facilities during reclamation. To facilitate reclamation, growth media would be stockpiled as close to the facility as possible, including direct placement on top of RDAs. Proposed GMS locations are discussed in detail in Section 2.4, Proposed Action.

<u>Waste Rock Characterization and Management</u>

The waste rock material for the proposed NOA project has been geochemically characterized using recommended test methodologies and procedures pursuant to BLM Instruction Memorandum (IM) NV-2010-014 (2010). Geochemical characterization of the waste rock material has included static and kinetic testing, whole rock analysis, and Meteoric Water Mobility Procedure testing for use in evaluating the acid drainage and metals leaching risk of the waste rock to be mined.

An Adaptive Waste Rock Management Plan (NOA PoO) was established to describe how overburden from the proposed NOA project would be managed and monitored to minimize erosion and prevent environmental impacts to waters of the State. The Adaptive Waste Rock Management Plan provides a conceptual model of an RDA; characterizes waste rock geochemistry; provides anticipated waste rock tonnages by project area and rock unit; summarizes results of environmental monitoring in existing RDAs (e.g., water quality and waste rock geochemical monitoring); discusses the strategy for classification, in-pit identification, mine planning, and overburden placement; describes water and rock monitoring programs; and provides an overview of proposed closure of the facility including design and placement of covers. Both the results from the geochemical characterization and the Adaptive Waste Rock Management Plan were submitted to the BLM as part of the PoO submittal (Barrick 2012a,b) and are discussed and evaluated in Section 3.3, Water Quality and Quantity.

The Adaptive Waste Rock Management Plan for the project will be submitted to the NDEP as part of the supporting documentation for the application for a WPCP application for the project. The NDEP WPCP will require that waste rock be evaluated for its acid generation/neutralization potential; and, provide a plan (including a sampling protocol, monitoring requirements, and reporting requirements) to manage

waste rock throughout the life of the project “to mitigate potential acid generation and any other release of pollutants” (NDEP 2014).

The network of groundwater wells would be expanded to monitor groundwater quality via water supply and monitoring wells within the proposed NOA project. The monitoring and sampling would be conducted in accordance with the applicable portions of the WPCPs in accordance with NDEP guidelines.

Barrick would use the waste rock and water monitoring data to update the Adaptive Waste Rock Management Plan, as necessary. Data and findings of each monitoring effort would be submitted in annual reports to the state regulatory agencies.

2.4.1.13 Ore Processing Overview

Heap leaching is defined as the process of recovering metals from low-grade ores by leaching ore that has been mined and placed on an engineered pad. In general, leach material would be end-dumped by haul trucks on the heap leach facilities in 10- to 30-foot lifts. If conditions warrant, leach material also may be crushed before conveyors and a radial stacker place the material on the heaps. Seismic analysis and engineering principles would determine the appropriate placement of HLF catch benches, lift height, maximum heap height, and overall foundation and HLF slopes as per State of Nevada requirements. To reduce closure earthworks costs and to maintain the reclaimed HLF within the perimeter berm, the design would incorporate the principle of constructing heap benches and setbacks at an overall angle of 3H:1V. The ultimate size of the HLFs within the proposed footprints may vary depending on project economics. Typical HLF cross-sections are presented within the NOA PoO (Barrick 2012a).

Prior to HLF construction, vegetation would be cleared, and growth media would be salvaged and placed in GMSs as close to the place of use as practical. New and reconfigured HLFs would be constructed pursuant to NAC 445A.432 and existing, approved designs already in operation within the BMM NOA. Facilities would employ the design principle of 100 percent containment (zero-discharge design) under both normal operating and specific emergency conditions. Current designs include primary geosynthetic liners overlaying leak collection and recovery systems (LCRS) where head may accumulate on the primary liner. Typical geosynthetic liners would be 80-mil high-density polyethylene (HDPE). Below the primary liner and LCRS, a compacted low-permeability soil layer equivalent to a 12-inch layer with maximum permeability of 10^{-6} centimeters per second (cm/sec) or a second synthetic liner would provide secondary containment. If no suitable soils are available, a secondary liner constructed of HDPE would be employed.

To relieve head buildup on the primary liner, a uniform, permeable overliner consisting of crushed rock would be placed over the primary liner. HLF liners would be placed so that no structural damage occurs to the liner during construction. The sub-base would be compacted and protruding rocks or debris removed. A typical liner design is illustrated in **Figure 2.4-8**. The overliner material would protect the synthetic liner from puncture and reduce the hydraulic head on the primary liner by ensuring rapid conveyance of fluids from the leach material to the perimeter ditches. This reduces the potential for a small puncture of the primary liner to result in leaking to the secondary liner. Haul trucks and loaders would not be allowed to operate on the lined system unless adequate material (overliner) is located between the surface and the primary liner to prevent damage. Smaller equipment may be used during overliner construction over thinner layers, as designed by a licensed professional engineer and approved within the WPCP. The overliner would be placed in a manner that would avoid perforating the liner. A network of slotted pipe trunks and laterals would be placed on a liner in a manner that would allow adequate drainage of the overliner material. The overliner material and drainpipe network would be designed such that less than 2 feet of hydraulic head is exerted on the pad liner during normal operations.

Before placement on the heap, leach material would be amended with lime for pH control as necessary. At least one lime silo with sufficient storage capacity would be located at or near each HLF. Dilute sodium cyanide solution would be applied to the leach material on the pad at a rate of approximately 0.0025 gpm per square foot. Solution would percolate through the leach material to the synthetic liner and would be collected by the heap drainage system. The collected pregnant solution would report to the pregnant solution pipeline and flow to a covered pregnant solution tank or process solution pond. The pregnant solution would then be pumped through carbon columns to load gold onto the carbon. Cyanide would be added to the process solution, which would be re-circulated back to the heap to continue the leaching process.

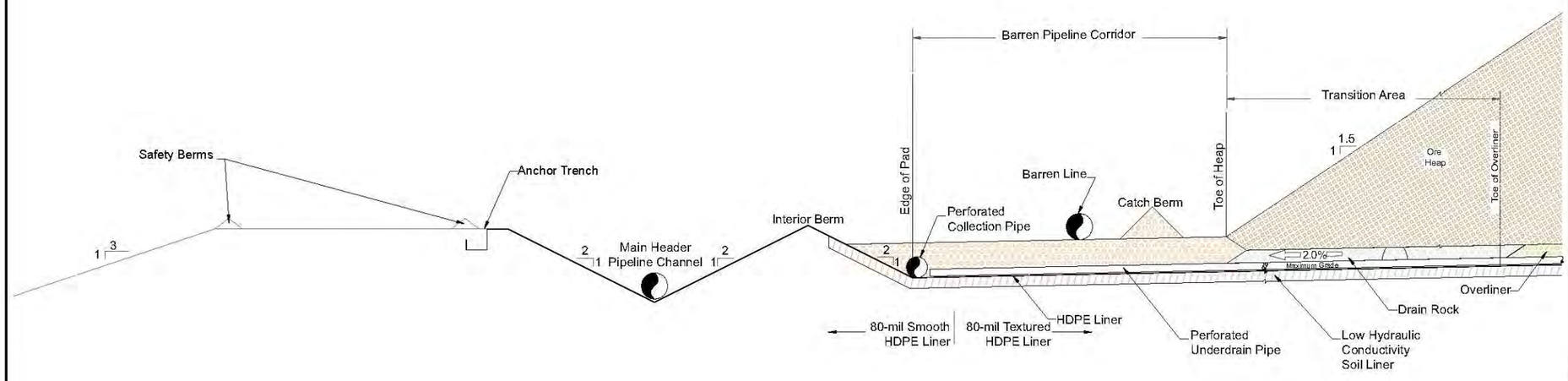
Agglomeration may be required to enhance the permeability of stacked leach material ensuring heap stability and improving gold recovery. Agglomeration is defined as the formation of a ball by the coalescence of fine particle material. This normally involves adding a binder to fine particles, so that the resulting material consists of individual particles that are larger than the original material and thus, of higher permeability. If agglomeration is necessary, run-of-mine or crushed leach material would be fed to a series of grasshopper conveyors located on the HLF. The conveyors would be set to cascade the leach material stream with cement and water/solution addition at each transfer point. The use of a rotary drum in the circuit may be required to control moisture content and curing of the binder material. Cement would be stored in a silo equipped with a bag house vent for dust control and dosed onto the leach material at conveyor transfer points. The number of transfer points would be based on leach material characteristics, and cement dosage would typically range from 5 pounds per ton leach material to 15 pounds per ton leach material depending on ore characteristics. Moisture addition at the transfer points would be set to increase the moisture content up to the recommended percent by weight. Dosage and stability parameters would initially be based on laboratory-scale test work and finalized through field trials to achieve a stable agglomerated solid.

2.4.1.14 Process Solution Ponds, Carbon Columns, and Support Facilities

Process areas include the following process components: leach pads, process solution ponds, leak detection and recovery systems, process buildings including tanks, sumps, pumps, and piping that interconnects the workings of the process buildings, freshwater ponds, and transfer pipes, valves and pumps that would be used in conveyance, control or detection of process fluids between the process components. Process areas are designed to contain all process fluids up to and including waters from a 25-year, 24-hour storm event and to withstand a 100-year, 24-hour storm event. The process systems would be designed as zero discharge, which means the there is no release or discharge from any process or non-process contaminants from the fluid management system.

New solution ponds would consist of a liner system which includes HDPE geomembrane primary and secondary liners and would incorporate continuous LCRS between the liners. All solution collection pipes would be placed in lined solution collection ditches, secondary pipes, or other approved secondary containment structures (i.e. pipe in pipe). Distribution piping would be constructed from welded steel, HDPE, or polyvinyl chloride. Pipeline ditches provide secondary containment and would be single-lined. At a minimum, the solution ponds would be sized and operated to withstand and fully contain process fluids from a 24-hour power outage as well as projected accumulations, including waters from a 25-year, 24-hour storm event. Ponds are designed and operated to maintain a minimum freeboard of 2 feet at all times.

As required by the NDOW Industrial Artificial Pond Permit, to discourage wildlife and domestic animals from accessing the ponds, the pond area would be surrounded by an 8-foot-tall fence with the bottom placed tight to the ground. All artificial or man-made bodies of water that contain any chemical in solution at levels lethal to wildlife (e.g., barren and pregnant solution ponds) would be covered or contained in a manner that would preclude access by birds and bats. All covers or containers would be maintained in a manner that would continue to preclude access by wildlife for as long as the pond or container holds solution.



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

Source: Barrick 2012a.

Bald Mountain Mine
North and South Operations
Area Projects EIS

Figure 2.4-8

Typical Liner Design

BLM

Ely District Office

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In the event of power loss, an auxiliary generator would supply emergency backup power to all process facilities. Spare pumps and parts also would be warehoused on-site. The generator would supply power to the pump(s) and associated ancillaries dedicated to the process solution system.

Each process pond would have an overflow spillway to the associated storm water/event ponds in the event the capacity of the process pond is exceeded. Interior slopes would be 3H:1V, and exterior slopes would be 2H:1V.

The liner system for the process ponds and the storm water/event ponds would consist of a double geomembrane liner and a leachate collection and return system. An HDPE liner of 80-mil thickness would serve as the primary liner, and an HDPE liner of 60-mil thickness would serve as the secondary liner. The HDPE liners have high strength and durability as well as ultra-violet resistance, thereby eliminating the need for a cover. The secondary liner would function as a seepage barrier in the event the primary liner is damaged or punctured.

A geonet drainage layer would be placed between the HDPE primary and secondary liners in the ponds to act as a separating, highly pervious layer to intercept and transport leakage. The geonet would lead into a depressed gravel-filled sump located at the pond low point to allow for collection of leakage. From the depressed sump, an HDPE riser pipe would be located between the primary and secondary liners and extend to the pond crest. The riser pipe would allow for leak detection monitoring and removal of solution leakage.

HLFs would be surrounded by containment berms to prevent storm water run-off from entering the facilities. In addition, culverts and diversion ditches may be placed in and around the facilities as necessary for further storm water control. Storm water runoff from the surrounding areas would be channeled to storm water/freshwater collection ponds with the use of culverts, diversion ditches, and piping, where necessary. Storm water collected in the ponds would be handled in accordance with the State of Nevada WPCP, which would allow for utilizing collected storm water in the process circuit.

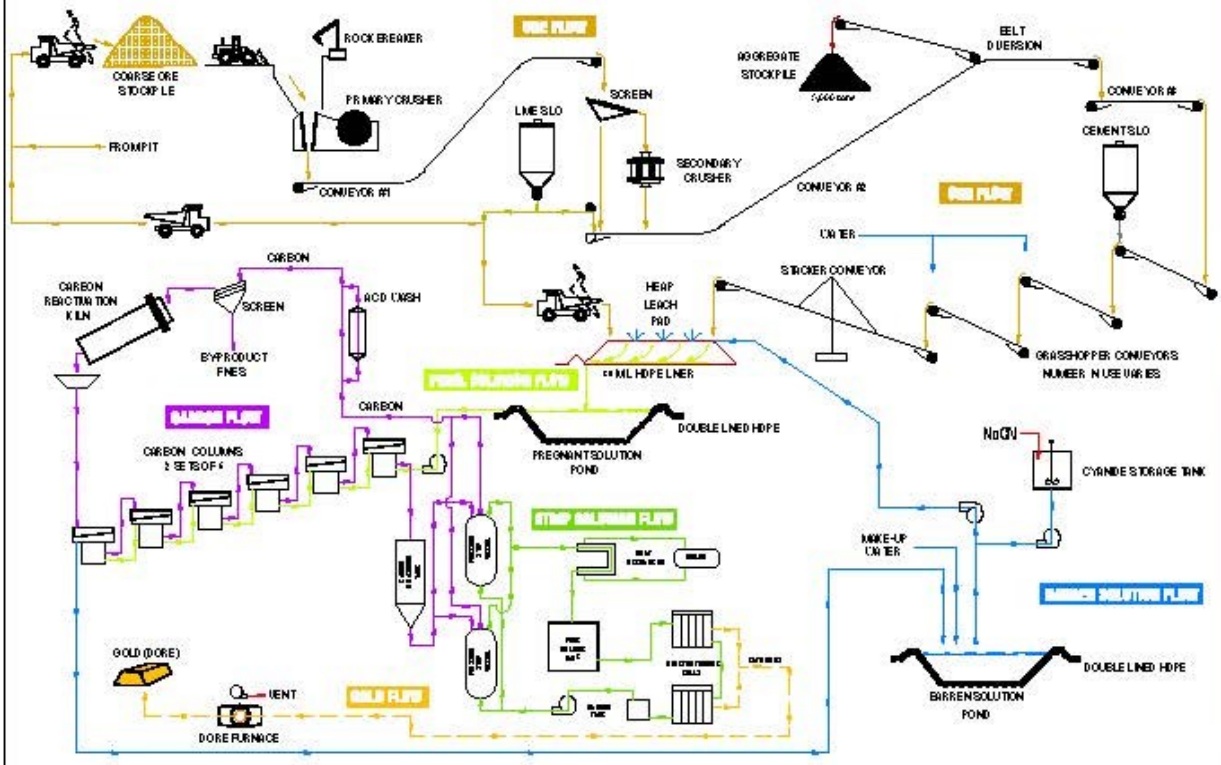
The size of the HLFs as well as associated ponds and process buildings would be within the proposed footprints, but may vary with project economics and geotechnical considerations. Final design of the proposed process components would be similar to the permitted and currently operated Mooney HLFs, process and storm water/event ponds, and process buildings located within the existing BMM NOA in accordance with the State of Nevada WPCP requirements. Final designs would be submitted to the NDEP prior to construction.

Loaded Carbon Transportation and Processing

Loaded carbon would be managed at the existing and permitted BMM process facilities, located near the existing BMM 2/3 HLF or transported to existing, off-site refining facilities, which would be determined on an as-needed basis. Refining entails stripping gold from the carbon in pressure strip vessels and then washing the stripped carbon with acid prior to reactivation in a kiln. Stripped gold electroplates onto cathodes in electrowinning cells and the material is rinsed, pressed, and retorted before placement into a dore furnace. A typical process flow diagram is illustrated in **Figure 2.4-9**.

2.4.1.15 Proposed Exploration

Ongoing exploration activities would be conducted within and adjacent to the proposed NOA project boundary, per existing approvals, to identify and delineate additional ore reserves. These activities would consist of geologic or geophysical surveys, access road grading or construction, and drilling programs. Drilling would be conducted to located new gold resources, confirm the grade and character of existing ore deposits (exploration drilling) or that an area contains no economically recoverable gold (condemnation drilling).



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

Bald Mountain Mine
North and South Operations Area Projects EIS

Figure 2.4-9

Heap Leach
Process Flow Diagram

Note: Strip solution flow (green) and the gold solution flow (gold) will take place at existing permitted facilities located within the North Operations Area.

Source: Barrick 2012a.

05/25/16

Under the Proposed Action, Barrick would reallocate exploration disturbance previously apportioned to the Regional Exploration PoO to the NOA project PoO and the SOA project PoO. Although the boundary of the Regional Exploration PoO would not change, the mining PoO boundaries would, and therefore a reconciliation would occur to eliminate overlapped acreage. As a result, approximately 86 acres of exploration-related disturbance previously allocated to the Regional Exploration PoO would become part of the proposed NOA project PoO. The transferred disturbance (86 acres) would be applied to the previously authorized exploration-related disturbance for the NOA project (475 acres). For the SOA project PoO, approximately 15 acres of exploration related disturbance would be transferred from the Regional Exploration PoO. The transferred disturbance (15 acres) would be applied to the previously authorized exploration related disturbance for the SOA project (69 acres). Appropriate permitting actions related to the Regional Exploration PoO would be conducted following approval of this EIS.

Drilling would be conducted using reverse circulation (RC) and diamond core rigs with support equipment which may include water, pipe, and pick-up trucks. Several drill rigs could be operating within the proposed NOA. Depending on exploration and development success, the number of rigs may vary to accommodate the exploration program. Both vertical and angle drill holes may be drilled. Drilling would be conducted using both wet and dry drilling techniques as the formation requires for maintaining an open hole. Water would be obtained from existing wells owned by Barrick for use on the proposed NOA project.

Where practicable, RC drilling for holes less than 1,000 feet in depth would use track-mounted, all-terrain or truck-mounted drill and support equipment. Access to drill sites would be by existing roads, cross-country, or light road construction.

Where practicable, RC drilling of holes greater than 1,000 feet would typically use either a track-mounted or a truck-mounted Schramm 685-type drill or other deep capacity equipment. These rigs are designed to drill to depths of beyond 4,000 feet and require drill pads to be constructed with the approximate dimensions of 50 feet by 100 feet; total pad disturbance would be dependent upon terrain. Access would be via existing roads, cross-country, or light road construction. Deep drilling would typically be wet, and sumps would be constructed. Sumps would be built with berms to prevent human and/or wildlife access and would remain bermed until backfilled. Berms would be constructed to direct storm water away from the sump, and unmixed drilling fluids would not be left exposed to the environment after completion of the hole.

Diamond core rigs would be used either when assay sampling requires solid core samples or for the collection of geotechnical or metallurgical samples. Core rigs would be either skid-mounted or rubber-tire mounted and would need a working pad of about 50 feet by 100 feet. Drilling fluids from these rigs would be discharged into sumps. Access would be over existing roads or with light road construction.

Each drill site may be utilized for drilling more than one hole. Up to 20 open rotary holes averaging 2,000 feet in depth, up to 10 diamond drill holes averaging 2,500 feet in depth, and up to 20 RC holes completed with diamond drilling methods to 3,000 feet (2,000 feet with RC and 1,000 feet with diamond drilling) may be open at any given time to account for additional drilling from the hole and downhole surveying. Up to 20 holes may be left open until a diamond core rig can set up to complete the hole.

Drill holes would be plugged immediately after data collection is complete, in accordance with Nevada Revised Statute (NRS) 534.425-428. Depth to groundwater varies within the proposed NOA PoO boundary. For bond cost estimation purposes, the depth to groundwater is estimated at 750 feet below ground surface, and drill hole abandonment costs include a combination of grout and carbonate-rich backfill.

Roads and drill pads would be constructed in a manner to minimize surface disturbance and resultant soil erosion. Access roads would be constructed on contour to the extent practical. Typically, road

grades would range from zero to 16 percent; however, some routes may exceed 16 percent. On steeper slopes, a dozer would be required to first construct access roads in order to safely traverse the terrain. Road disturbance would include the construction of drill pad and sumps. If blasting becomes necessary, shot holes would be drilled with an air track drill or a trailer-mounted air compressor and hand-held rock drills. The shot hole would be packed with explosives and detonated to fracture rock. The minimum charge of explosive would be used to reduce fly rock. Specific blasting times would vary; however, BMM would make a reasonable effort to schedule blasting activities in the late afternoon. Licensed personnel would perform all blasting activities. Signs would be posted along the affected access roads, and all personnel within the affected area would be notified prior to blasting. A safe blasting perimeter would be maintained using blockades and other appropriate methods. Explosive materials would be stored and transported in a manner consistent with federal regulations.

In accordance with BLM Egan Field Office policies, land clearing and surface disturbance would be timed to prevent destruction of active bird nests during the avian breeding season (March 15 to July 31). During avian breeding season, a survey for the presence of active nests or breeding activity will be conducted by a qualified biologist no more than seven days prior to commencement of activities that result in disturbance. An avian survey is required for each additional disturbance during avian breeding season. In the event that an active migratory bird nest is identified, the area would be avoided or buffer zones would be established to prevent destruction or disturbance of active bird nests until the birds are no longer present. If avoidance is not possible, the required avoidance buffer zone would be determined in consultation with the BLM on a species-specific basis. A pygmy rabbit survey prior to disturbance would be conducted if it is in an area likely to support substantial populations of pygmy rabbits. The BLM may determine it necessary to restrict activities near burrows during the months of April, May, and June. For cultural resources, a Class III cultural resources survey will be conducted prior to the initiation of exploration disturbance activities. If a cultural site is located within the proposed drill pad location area or access road, avoidance area buffers would be created to protect the site until it is evaluated for eligibility under applicable procedures. If a site is determined to be eligible, activities may proceed under the PA and disturbance may be allowed within an existing avoidance buffer with stipulations including the use of an archaeologist to monitor grubbing activities.

Drill pads would be constructed by removing the vegetation and leveling the ground surface. Soil stripped in the process would be stockpiled as a berm for sediment control and would be available for redistribution during reclamation. Sumps would be excavated, and the resulting material would be stockpiled on-site for use in backfilling and reclamation. Stockpiles remaining over the growing season would be seeded with the interim seed mix.

Roads would be built to comply with applicable MSHA regulations. These roads would be for drill access only and not for through traffic.

Barrick would construct exploration roads and drill sites with appropriate slope on the cut-banks, as necessary, to minimize erosion and visual impacts. Drainage structures would be constructed, where necessary, to minimize excessive erosion. Drainage structures to reduced offsite sediment transport may consist of, but are not be limited to, water bars, borrow ditches, and contour furrows. Growth media would be placed in sidecast fill material on constructed roads and drill sites. Stockpiles remaining over the growing season would be interim seeded.

2.4.1.16 Petroleum Contaminated Soil

The Petroleum Contaminated Soil (PCS) Management Plan within the NOA PoO (Appendix L) (Barrick 2012a) was developed in accordance with the NDEP guidelines. The PCS Management Plan provides site information and details that apply to PCS and antifreeze contaminated soil (ACS) that is generated, monitored, and stored. The following components are associated with PCS and ACS management: PCS and ACS source type identification and characterization, interim management, long-term management, monitoring and reporting, and a contingency plan. Exceptions to PCS and ACS managed in the PCS Management Plan include hazardous PCS (managed according to Resource Conservation

and Recovery Act [RCRA] regulations), free draining hydrocarbons, and NDEP-approved formal proposal for no further action.

Collected PCS and ACS would be transferred and segregated at the BMM Holding Pad or to provisional, short-term placement at an on-site disposal location until screening to determine suitability of its eligibility for on-site long-term management based on the risk assessment and screening levels for each constituent of concern (COC). Any COCs that have been exceeded would require the implementation of any of the options in the contingency plan, including off-site disposal. The BMM Holding Pad is located adjacent to the truck wash. The BMM Holding Pad is an engineered containment structure approved by NDEP for temporary storage of PCS and ACS.

Provisional placement locations are engineered structures approved by the NDEP where the PCS and ACS are retrievable until screening is completed. Long-term disposal locations are approved by the NDEP and include the utilization of BMPs to preclude storm water run-on and the management of storm water runoff. Provisional placement and PCS and ACS disposal locations include the Top Pit/Sage Facility, North 1 RDA, Rat West RDA, East Sage RDA, BMM No. 1 HLF, and the BMM 2/3 HLF. When additional PCS disposal locations may be needed; the PCS management plan would be updated and approved by the NDEP prior to construction.

PCS and ACS placed on a holding pad or provisionally placed at an on-site disposal location would be sampled and analyzed. The laboratory analytical results would be compared to the risk-based screening limits to determine whether the PCS and ACS would remain at the provisionally placed on-site disposal location, transferred from the temporary holding pad to an on-site final disposal location, subject to re-assessment, or sent off-site for appropriate disposal. Risk assessment and sampling criteria has been developed in accordance with NDEP guidelines and is presented in the PCS Management Plan (Barrick 2012a).

On-site disposal of PCS and ACS would be managed to prevent or minimize the potential for erosion and sediment transport by employing appropriate sediment and erosion control. Additionally, the on-site final disposal locations are designed to avoid drainages. Following the NDEP guidance, the PCS and ACS disposal locations would be closed and reclaimed when no longer needed or required. The area affected by PCS and ACS would be graded and compacted to a maximum of 3-foot thickness, then covered with at least a 2-foot cover that is compacted to achieve a permeability of 1×10^{-5} cm/sec. Sloping would be at 3 percent to drain surface water. Growth media would be applied to a depth of 6 inches and placed over the compacted cover, and seeded with an approved seed mix the first planting season following closure activities. Permeability tests would be performed on the compacted soil layer to demonstrate that the minimum permeability has been achieved. An as-built report, including the permeability results, would be prepared following completion of PCS and ACS disposal location closure activities.

2.4.1.17 Hazardous Materials

The following section describes hazardous materials transport and storage, emergency planning and response, spill containment, and hazardous and non-hazardous waste management within the proposed NOA project. Existing/authorized and proposed facilities for the proposed NOA project described herein are illustrated in **Figures 2.4-1** and **2.4-2**. Existing/authorized and proposed surface disturbance acreages for all hazardous and non-hazardous material-related facilities within the proposed NOA are presented in **Table 2.4-1**.

Chemical Transportation and Storage

As described in the Spill Contingency Plan (NOA PoO, Appendix K), the primary chemicals and fuels to be used as part of the proposed activities include sodium cyanide, diesel fuel, ammonium nitrate, sodium hydroxide, propane, lime, gasoline, carbon, and anti-scalant (Barrick 2012a). **Table 2.4-38** summarizes

the current usage estimates for chemical consumables necessary to construct and operate the proposed NOA project. Authorized carriers, which adhere to the regulations and requirements of the USDOT International Cyanide Management Code for cyanide transport, would transport chemicals and fuels to the proposed NOA on an as-needed basis using one of the following transportation routes: 1) from Ely or Eureka via U.S. Highway 50 to State Highway 892 (Strawberry Highway) to the BMM; or 2) from Ely via U.S. Highway 50 to Long Valley Road to the Mooney Basin, Winrock, Royale, Poker Flats, or Duke areas. **Figure 2.4-6** illustrates each aforementioned transportation route to the NOA.

Sodium cyanide is transported by carriers that are International Cyanide Management Code certified which requires the transporter to analyze risks for the transportation route and undergo an external audit every 3 years to maintain certification.

Effective chemical and fuels management on site requires the presence of spill containment structures, preventative maintenance, inspections, and monitoring of transfer operations from beginning to end. All applicable standard operating procedures, including proper training of authorized carriers and employees per Barrick's environmental policies and procedures, would be followed. Material Safety Data Sheets (MSDS) sheets for each on-site chemical would be available, updated as necessary, and accessible to mine personnel. Chemical inventories including quantity, location, and categorization of the chemicals' physical and health hazards that are stored on-site are maintained and reported annually to the State of Nevada Fire Marshal. Storage areas would be constructed with 110 percent secondary containment, where appropriate, in designated yards areas or process areas. Sodium cyanide would be stored in tanks that are physically separated from acid storage areas. Blasting agents and explosives would continue to be stored within magazines, in separate locations, and used on site in accordance with MSHA (30 CFR 56E), BATF, and, Department of Homeland Security regulations (where applicable). Site security measures including the presence of on-site security and restricted access would be implemented.

Spill Prevention and Emergency Preparedness and Response

Emergency planning, response, and prevention are developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Superfund Amendments and Reauthorizations Act (SARA), and SARA Title III (Emergency Planning and Community Right-to-Know Act) requirements and the applicable regulations and guidelines established and enforced by the NDEP, USDOT, Nevada Department of Transportation (NDOT), BATF, Department of Homeland Security, and MSHA. An Emergency Response Plan (NOA PoO, Appendix M) was developed to establish responsibilities, guidelines, and procedures for response and mitigation actions taken by mine personnel in the event of an emergency at the mine (Barrick 2012a). Additionally, a Spill Contingency Plan (NOA PoO, Appendix K) was developed to establish reporting and notification procedures for qualifying releases. The Spill Contingency Plan identifies potential sources of spills, establishes measures of prevention, and defines control, cleanup, and reporting procedures in the event of a hazardous material spill, petroleum release, or seismic event including CERCLA-qualifying releases (Barrick 2012a). Resources such as heavy equipment, fire equipment, hazardous material equipment and clean-up supplies are readily available to control, contain, and clean-up in the event of an unplanned, sudden or non-sudden release.

Table 2.4-38 North Operations Area Project Primary Chemicals and Fuels Usage

Chemicals and Fuels	Average Annual Usage Existing Operations	Average Annual Usage Proposed Operations	Proposed Deliveries per Year	Proposed Storage Amount	Storage Method	Location of Material	How Material is Used
Diesel Fuel and Gasoline	7,500,000 gallons	10,000,000 gallons	487	25,000 gallons	Bulk Tank	Fuel Islands	Equipment fuel
Ethylene Glycol	4,500 gallons	4,500 gallons	4	1,500 gallons	Bulk Tank	Truck Shop	Equipment coolant
Methanol	5,000 gallons	5,000 gallons	1	5,000 gallons	Bulk Tank	Fuel Islands	Drill lubricant
Propane	40,000 gallons	40,000 gallons	3	20,000 gallons	Bulk Tank	Admin/ Shop Areas	Heating
Propane	270,000 gallons	702,000 gallons	28	60,000 gallons	Bulk Tank	Process Plants	Kiln and furnace fuel and heating
Sodium Cyanide	550,000 gallons	3,800,000 gallons	608	73,000 gallons	Bulk Tank	Process Plants	Metals recovery
Ammonium Nitrate Fuel Oil (ANFO/PRILL)	750,000 pounds	750,000 pounds	26	25 tons	Bulk Tank	Shop Areas and/or near active mining areas	Blasting operations
Antiscalant	n/a	24,000 gallons	5	21,000 gallons	Bulk Tank	Process Plants	Process operations
Sodium Hydroxide (Liquid Caustic Soda)	200,000 pounds	890,000 pounds	28	10,000 gallons	Bulk Tank	Process Plants	Solution pH control
Calcium Oxide (Pebble Lime)	41,000 tons	51,000 tons	1,275	800 tons	Bulk Tank	Near Heaps Ore	pH control
Hydrochloric Acid	30,000 pounds	812,000 pounds	20	10,000 gallons	Bulk Tank	Process Plants	Process operations

Source: Barrick 2012a.

A fluid management plan(s) is required by the NDEP for each WPCP. This plan provides design and operational descriptions of the process facilities' fluid management systems that provide containment for process fluids during normal, abnormal, or emergency operating conditions. The fluid management plan(s) also outlines monitoring requirements, sample chemical analyses and parameters, reporting requirements, and remedial actions that are collectively used for evaluating the performance of the fluid management system. As part of the NDEP permitting process, these plans would be updated to reflect the new process components associated with the proposed activities.

Hazardous Waste Management

The proposed NOA project would produce various wastes as a result of construction and operational activities with some being regulated as hazardous wastes pursuant to federal and state requirements. Hazardous waste management is subject to specific requirements that are dependent upon the amount of hazardous waste produced at a facility in a calendar month. The existing BMM NOA and Mooney Basin areas are classified as a Small Quantity Generator (SQG) of hazardous waste as defined by the RCRA. Should hazardous waste be generated in quantities exceeding the SQG threshold, Barrick would obtain a hazardous waste identification number from the USEPA.

A summary of annual hazardous material usage by material and volume is presented in Section 3.20, Hazardous Materials and Solid Waste. MSDS, Department of Transportation Emergency Response guidance, and waste profiles provide information regarding the primary hazardous chemicals and constituents in the waste streams. No new hazardous waste streams would be generated as part of the proposed activities. The practice of recycling used oil, antifreeze, solvents, batteries, aerosol cans, filters, scrap metal, and office equipment (e.g., computers and printers) would continue. Waste minimization practices, including reducing the total amount of waste generated and replacing hazardous products with less hazardous products to reduce the volume and toxicity of waste generated on-site would continue under the proposed activities.

Temporary on-site hazardous waste storage areas (i.e., satellite accumulation areas) would be utilized for any hazardous waste generated within the proposed NOA project. Each satellite accumulation area could receive up to 55 gallons of non-acute hazardous waste or 1 gallon of acute hazardous waste prior to transfer to a site hazardous waste storage facility. Hazardous waste would be accumulated before being disposed of at an off-site permitted hazardous waste disposal facility. The satellite accumulation areas would be designed and maintained; and the on-site hazardous waste storage area would be designed, built, and maintained in accordance within RCRA requirements (40 CFR subpart C 262.34 (d)(e)(f)) and would include container and facility inspections. All hazardous waste containers would be labeled and, with the exception of adding or removing waste, would remain closed at all times. Preparing hazardous waste for shipment off-site, including providing waste profiles, proper waste packaging and labeling, preparation of manifests prior to shipment, and the use of approved placards, would continue in accordance with RCRA, NDEP, and NDOT regulations. Emergency response measures related to hazardous waste including reporting procedures and response actions in the event of an unplanned sudden or non-sudden release would be managed in accordance with the aforementioned Emergency Response Plan and Spill Contingency Plan (NOA PoO, Appendices M and K, respectively).

Non-hazardous/Solid Waste Management

The currently authorized BMM and Saga Class III-waivered landfill locations would continue to be utilized, and an additional landfill would be constructed within the proposed Casino South RDA disturbance area. The landfills would accept approved non-hazardous solid wastes including glass, plastics, waste paper, wood, and other non-decomposing wastes. Maintenance activities include weekly cover of waste material and inspections to ensure adequate cover placement, containment of waste material, and storm water control.

No change to the existing non-hazardous solid waste streams (types and sources of non-hazardous waste) would occur as a result of the proposed activities.

2.4.1.18 Public Safety

The proposed NOA PoO boundary would only be partially fenced due to existing topography and the size of the NOA. Barrick currently utilizes and would continue to provide public safety controls for the mine site to limit public access and mine employees and to comply with safety and health requirements (see Traffic Management Plan [NOA PoO, Appendix J]) (Barrick 2012a). Public safety measures that would continue to be used at the mine site include the following: gates located at the entrances to the mine site; fencing around potentially hazardous areas (e.g., HLFs, process ponds, and process buildings); and construction berms along haul roads to prevent public access to these roads. Road repairs and maintenance such as grading, watering, and snow plowing would be performed along public access road re-routes. Chemicals would be stored in secure buildings throughout the mine site in accordance with applicable RCRA, NDEP, NDOT, and Nevada Department of Public Safety Hazardous Materials requirements.

Other general safety measures that would be used at the proposed NOA include the following: speed limits posted and enforced on access routes and on roads throughout the proposed NOA; warning signs posted in areas where conditions warrant posting signs; training for employees as required by MSHA; and other MSHA training and safety requirements as enforced by Barrick.

2.4.2 South Operations Area Project

Under the Proposed Action, the existing Alligator Ridge Mine and the Yankee Mine PoO boundaries would be expanded and combined into a unified PoO boundary called the SOA project. The proposed SOA project PoO boundary would be expanded to approximately 10,865 acres, including a travel route between the Alligator Ridge and Yankee operations as well as a TUC between the NOA and SOA projects for a net increase of 5,563 acres from the existing Alligator Ridge Mine and Yankee Mine PoO boundaries.

Proposed activities within the proposed SOA project would include:

- Modification of three existing open pits and development of one new open pit;
- Modification of four existing RDA and development of three new RDAs;
- Modification of two existing HLF and development of one new HLF and associated process facilities;
- Improvement to existing roads and reroute public access;
- Development of new support facilities;
- Modification of the Regional Exploration PoO boundary to remove overlap with the proposed SOA project boundary; and
- Implementation of exploration drilling activities within the proposed SOA project boundary.

Under the Proposed Action, the proposed SOA project would increase the total surface disturbance from 913 acres to 3,653 acres, for a net increase of 2,740 acres.

2.4.2.1 Land Ownership and Mining Claims

Figure 2.3-5 illustrates the surface ownership within the proposed SOA PoO boundary. Under the Proposed Action, the SOA PoO would total 10,865 acres, all of which occur on BLM-administered lands. Although total PoO acreage would increase under the Proposed Action, surface ownership would remain consistent with that presented under the No Action Alternative.

Proposed mining and related surface disturbance would be conducted on unpatented lode claims that are owned, leased, or controlled by Barrick on BLM-administered public lands or on private land controlled by Barrick. The property legal descriptions and claim names with BLM serial numbers are presented within Appendix A (SOA PoO) (Barrick 2012b).

2.4.2.2 Proposed Schedule and Work Force

The proposed SOA project would begin as early as year 2, pending permit approvals. Construction-related activities would commence in mine year 2 and continue through mine year 6. Operation-related activities would commence in mine year 3 and continue through year 21. Leach material processing would continue for approximately 3 years after mining operations cease. Phased reclamation would begin in mine year 4 and would be conducted through closure (year 45). Reclamation, closure, and post-closure fluid monitoring would continue for a minimum of 5 years for each closed component. Reclamation monitoring would be conducted for a minimum of 3 years for each reclaimed area or until revegetation stability has been achieved. **Table 2.4-39** illustrates the proposed SOA project timeline.

To the extent practicable, Barrick would utilize existing employees living in the Ely and Eureka areas to operate the proposed SOA project. Peak staffing levels during facility construction would include an increase of up to 100 full-time employees and 200 contractors.

2.4.2.3 Vantage, Luxe, and Gator Areas

The following section outlines the development, reconfiguration, and/or expansion of each facility located within the proposed Vantage and Luxe areas within the proposed SOA project under the Proposed Action. In summary, Barrick proposes to amend its existing SOA PoO to conduct the following activities within the proposed Vantage and Luxe areas:

- Combine and expand the existing Luxe pits to form the proposed Luxe Pit;
- Combine and expand the existing Vantage and Luxe Saddle pits to form the proposed Vantage Pit;
- Develop the proposed Gator Pit;
- Develop the proposed Luxe, Vantage, Gator North, and Gator South RDAs;
- Develop the proposed Vantage and Gator HLFs and associated process facilities, solution ponds, and storm water/event ponds;
- Improve the existing unnamed county road between the existing Alligator Ridge Mine and the existing Yankee Mine;
- Improve the existing unnamed county road between the proposed NOA and SOA projects; and
- Expand and develop interpit, haul road, access road, and ancillary and support facility infrastructure, as detailed below.

Figures 2.4-3 and **2.4-4** illustrate the existing/authorized and proposed new disturbances and life-of-mine (full build-out), respectively, for the proposed Vantage and Luxe areas under the Proposed Action. **Table 2.4-2** summarizes the existing/authorized and proposed surface disturbances for the proposed Vantage and Luxe areas under the Proposed Action.

Table 2.4-39 Proposed Action – Project Timeline for the South Operations Area Project[1,2]

Activity	Year														
	1	2	3	4	5	6	7	8	9 to 13	14 to 21	22 to 29	30 to 32	33 to 45	46 to 50	51 to 75
Construction															
Operation															
Reclamation															
Closure															
Reclamation Monitoring															
Post-Closure Monitoring[3]															

[1] Exploration activities would occur from mine year 1 through mine year 22.

[2] This schedule is conceptual and subject to changes due to mining sequences that may affect the overall plan.

[3] Post-closure monitoring would be conducted for at least 5 years, and could continue up to 30 years, following completion of heap leach processing based on current NDEP regulations. The duration of the BLM's post-closure monitoring would depend on the project's final closure plan and its implementation. A minimum of 50 years and a maximum of 75 years.

Source: Barrick 2012b.

Proposed Open Pits

Two existing open pits (i.e., Luxe and Vantage pits [former Luxe, Vantage, and Luxe Saddle pits]) would be expanded, and one new open pit (i.e., Gator Pit) would be developed within the proposed Vantage and Luxe areas.

Luxe Pit

The proposed Luxe Pit would combine and expand the existing Luxe pits. Leach material would be hauled to the proposed Vantage HLF; waste rock material would be hauled to the proposed Luxe RDA.

Vantage Pit

The proposed Vantage Pit would combine and expand the existing Vantage and Luxe Saddle pits. The proposed pit expansion would merge and expand the Vantage Pit O, Vantage Pit I, IB; Vantage Pit II, Vantage Pit III, ARM Pit, and Luxe Saddle Pit; and would remove reclaimed pit backfill areas as well as portions of the reclaimed North RDA V, South RDA (II and III), and Luxe Saddle RDA VI, and all of the reclaimed Luxe Saddle RDA VII. The proposed Vantage Pit also would remove the majority of existing and reclaimed Vantage HLF cells A through L. Leach material would be hauled to the proposed Vantage or Gator HLFs; waste rock material would be hauled to the proposed Luxe or Vantage RDAs.

Gator Pit

No previous mining facilities are located with the Gator Pit footprint. Leach material would be hauled to the proposed Gator HLF; waste rock material would be hauled to the proposed Gator North or Gator South RDAs.

Table 2.4-40 summarizes the proposed open pit design parameters within the proposed Vantage and Luxe areas. **Table 2.4-41** summarizes anticipated/estimated leach material and waste rock material production quantity within the proposed Vantage and Luxe areas.

Table 2.4-40 South Operations Area Project Pit Design Parameters – Vantage, Luxe, and Gator Areas[1]

Proposed Open Pit	Slope (degrees)	Length (ft)	Width (ft)	Depth (ft)	Pit Bottom Elevation (ft amsl)
Luxe	30-55	2,830	1,565	350	6,740
Vantage	30-50	5,030	5,010	945	5,860
Gator	50-55	3,350	965	300	6,600

[1] Surface disturbance acreages are provided in **Table 2.4-2**.

Source: Barrick 2012b.

Table 2.4-41 South Operations Area Project Estimated Ore and Waste Rock Tonnages – Vantage, Luxe, and Gator Areas[1]

Proposed Open Pit	Leach Material (MT)	Waste Material (MT)	Total (MT)
Vantage and Luxe[2]	48	200	248
Gator	9	4	13
Total	**57**	**204**	**261**

[1] Values have been rounded to the nearest whole integer

[2] The Vantage and Luxe material quantities were grouped together by operation area versus individual pit.

Source: Barrick 2012b.

Proposed Rock Disposal Areas

Four new RDAs (i.e., Luxe, Vantage, Gator North, and Gator South) would be developed within the proposed Vantage and Luxe areas.

The percentage of PAG material for each RDA was determined based on the proposed SOA project mine plan. **Table 2.4-42** summarizes ABA average values within the proposed Vantage and Luxe areas.

Table 2.4-42 South Operations Area Project Static Acid-base Accounting Average Values – Vantage, Luxe, and Gator Areas[1]

Proposed Mine Area	Waste Rock Material (MT)	Average Acid Neutralizing Potential (kg/t)	Average Acid Generating Potential (kg/t)	Average Net Neutralizing Potential (APN) (kg/t)	Neutralizing Potential Ratio (NPR)
Luxe	4.0	433	17.6	+415.4	24.60
Vantage	19.61	330	16.2	+313.8	20.37
Gator	3.9	44	17.9	+26.1	2.46

[1] By definition, ANP and NNP are the kg of calcium carbonate per metric ton of rock and have maximum values of 1,000. Similarly, AGP is the kg of sulfur per metric ton of rock and has a maximum value of 1,000. Higher ANP, NNP, NPR and lower AGP values are favorable and indicate a reduced likelihood for acid drainage. NNP values of 0 or less are considered PAG material.

Source: Barrick 2013.

Luxe RDA

The proposed Luxe RDA would be constructed to accommodate waste rock material from the proposed Luxe and Vantage pits. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the Luxe area contains 94.0 percent carbonate-rich waste with an average NNP of 415.4 kg/t and a NPR of 24.60 (Barrick 2012b).

Vantage RDA

The proposed Vantage RDA would be constructed to accommodate waste rock material from the proposed Vantage Pit. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the Vantage area contains

94.4 percent carbonate-rich waste with an average NNP of 313.8 kg/t and a NPR of 20.37 (Barrick 2012b).

Gator North and Gator South RDAs

The proposed Gator North and Gator South RDAs would be constructed to accommodate waste rock material from the proposed Gator Pit. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the Gator area contains 61.7 percent carbonate-rich (defined as having an NP/AG ratio >2) waste with an average NNP of 26.1 kg/t and a NPR of 2.46 (Barrick 2012b). As more geologic information becomes available, the estimated portion of PAG material at the Gator Pit may be revised based on the Adaptive Waste Rock Management Plan (Barrick 2012a,b).

Table 2.4-43 summarizes proposed RDA height and capacity parameters, and originating source of waste rock material within the proposed Vantage and Luxe areas.

Table 2.4-43 South Operations Area Project Rock Disposal Area Design Parameters – Vantage, Luxe, and Gator Areas[1,2]

Rock Disposal Area	Height (ft)	Incremental Capacity (MT)[3]	Source of Waste Rock Material
Luxe	225	19	Luxe Pit, Vantage Pit
Vantage	625	223	Vantage Pit
Gator North	150	3	Gator Pit
Gator South	150	6	Gator Pit

[1] Surface disturbance acreages are provided in **Table 2.4-2**.

[2] Elevations were not provided because designs are preliminary and subject to change based on detailed mine planning, project economics, geotechnical considerations, and other engineering design considerations. The RDAs would be constructed within the proposed footprints with an approximate height above original ground surface as listed above.

[3] Values have been rounded to the nearest whole integer.

Source: Barrick 2012b.

Proposed Ore Processing Facilities

Two new HLFs and associated process facilities, solution ponds, and storm water/event ponds (i.e., Vantage and Gator) would be developed within the proposed Vantage and Luxe areas.

Vantage HLF

The proposed Vantage HLF would be constructed south of the proposed Vantage Pit. The proposed Vantage HLF would replace the existing and reclaimed Vantage HLF cells A through L, and the existing and reclaimed Vantage HLF cells M through O. The existing heap material would be removed and restacked onto the proposed HLFs. The removal and disposal of the existing HLF liners would be determined on a case-by-case basis in consultation with the State of Nevada.

Gator HLF

The proposed Gator HLF, which would be located in an area not previously disturbed, would be constructed to accept leach material from the Gator Pit. Additionally, the Gator HLF has been sized to receive leach material planned for delivery to the Vantage HLF in the event geotechnical or other engineering considerations preclude full development of the proposed Vantage HLF.

Table 2.4-44 summarizes proposed HLF height and capacity parameters within the proposed Vantage and Luxe areas.

Table 2.4-44 South Operations Area Project Heap Leach Facility Design Parameters – Vantage, Luxe, and Gator Areas[1]

Heap Leach Facility	Heap Height[2] (ft)	Incremental Capacity (MT)[3]
Vantage	250	37
Gator	250	79

[1] Surface disturbance acreages are provided in **Table 2.4-2**.

[2] Height above original ground surface.

[3] Values have been rounded to the nearest whole integer.

Source: Barrick 2012b.

New process ponds would be constructed within the proposed process areas associated within the proposed Vantage and Luxe areas. **Table 2.4-45** summarizes the conceptual pond design parameters within the proposed Vantage and Luxe areas.

Table 2.4-45 South Operations Area Project Conceptual Pond Design Parameters – Vantage, Luxe, and Gator Areas

Pond	100-year, 24-hour Storm Event (inches)[1]	Pond Depth (ft)	Operating Capacity (million gallons)[2]
Vantage Process	2.9	22	25
Vantage Storm Water/Event	2.9	20	11
Gator Process	2.7	22	25
Gator Storm Water/Event	2.7	20	11

[1] Storm event source data from the NOAA Atlas 14, Volume 1, Version 5 (2011).

[2] Values have been rounded to the nearest whole integer.

Source: Barrick 2012b.

Proposed Interpit Areas, Haul Roads, and Access Roads

The following proposed interpit areas, haul roads, and access roads would be developed and/or expanded in support of various facilities within the Vantage and Luxe areas. Typical in-pit haul road cross-sections are presented as a component of the open pit typical within the SOA PoO (Figure 2) (Barrick 2012b).

Interpit Areas

Interpit areas would be developed within the proposed Vantage and Luxe areas. Interpit specifications including permitting and operational use would be consistent with those described in Section 2.4.1.4, Interpit Areas (Redbird and Rat Areas).

Haul Roads

Three haul roads would be developed within the proposed Vantage and Luxe areas including the following: 1) between the proposed Luxe and Vantage pits; 2) between the proposed Gator process area and proposed Vantage Pit; and 3) between the proposed Gator South RDA and proposed Gator HLF. Generally, haul roads would connect the proposed open pits with the associated proposed RDAs as well as provide routes to transport leach material to the nearest available HLF. Haul road, haul road berm, temporary ramp, and secondary road design parameters would be the same as those discussed in Section 2.4.1.4, Haul Roads (Redbird and Rat Areas).

Access Roads to Monitoring Wells, Water Wells, and Piezometers

Per existing permit authorizations, Barrick would continue the use of existing access roads to the existing/authorized monitoring well, water wells, and piezometer sites within the proposed Yankee Area. No proposed monitoring well or piezometer sites would be developed; therefore, the development of additional access roads is not anticipated.

Public Access Roads

The proposed SOA project can be accessed via three public access routes: 1) from Elko via State Highway 228 (Jiggs Highway) south; 2) from Ely via U.S. Highway 50 to Long Valley Road; and 3) from Eureka via U.S. Highway 50 to State Highway 892 (Strawberry Highway). **Figure 2.4-6** illustrates public access roads and possible traffic control points which would provide monitored access within the proposed SOA. Public access would be restricted to existing roads that currently cross active mining areas in accordance with MSHA and other applicable requirements. Public access would be controlled with fences and locked gates or other physical methods to ensure public safety. The Traffic Management Plan describes existing public access roads, public access road reroutes, and mine access/public access intersections and traffic controls within the proposed SOA (Appendix I) (Barrick 2012b).

Within the proposed Vantage and Luxe areas, a public access reroute would be constructed around the proposed Vantage facilities. The public access reroute would consist of upgrades to approximately 26,045 feet of existing roads and two-tracks that would be constructed in accordance with White Pine County road standards. From shoulder to shoulder, the road width would be 30 feet, with a maximum grade of 10 percent. The 10 percent grade would occur for less than 1,000 feet of the total road. Side ditches would be constructed in cut sections; side ditch slopes from shoulder to flow line would not be steeper than 6H:1V. The ditches would have a minimum depth of 1 foot and would be large enough to carry drainage. Where necessary, culverts would be installed with a minimum diameter of 18 inches. Unless otherwise approved by White Pine County, Type 2 Class B aggregate would be used to establish running surfaces. Graveled surfaces would be a minimum of 6 inches thick with an additional 6-inch-thick suitable gravel sub base. Barrick would consult with White Pine County and obtain required permits prior to excavation and road maintenance.

The existing unnamed county road between the proposed NOA and SOA projects, as well as the existing unnamed county road between the Yankee and Vantage HLFs would be widened, upgraded, and maintained to allow for transporting heavy equipment between operations areas, as necessary. Transport of heavy equipment between operations areas may result in temporary public access restrictions. Barrick would consult with White Pine County and obtain required permits prior to construction and road maintenance.

Transportation/Utility Corridor

The proposed TUC would be developed by widening and upgrading the existing 9.9-mile-long 12-foot-wide unnamed county road to allow for the transportation of heavy equipment between the proposed NOA and SOA PoO boundaries. The proposed TUC would have a maximum running width of approximately 85 feet with average surface disturbance widths of approximately 110 feet. Per existing

permit authorizations, Barrick would continue the use of its existing transmission line located within the proposed TUC between the proposed NOA and SOA PoO boundaries.

Proposed Ancillary and Support Facilities

The following proposed ancillary and support facilities, including GMSs, transmission lines, water supply, fences, ancillary areas and yards and buildings would be developed, reconfigured, or expanded within the proposed Vantage and Yankee areas.

Growth Media Stockpiles

GMSs would be developed adjacent to proposed Vantage and Luxe facilities. Growth media stockpiling within the proposed SOA would be consistent with that described in Section 2.4.1.4, Growth Media Stockpiles (Redbird and Rat Areas).

Borrow Pits

There are no proposed designated borrow pit locations within the proposed Vantage and Luxe areas; however, Barrick anticipates continuing the current practice of developing borrow areas from authorized disturbance areas, where the appropriate material is available. Borrow materials would be used to supply road base, gravel, heap overliner, etc. to support mining and processing operations.

Transmission Lines and Substations

Per existing permit authorizations, Barrick would continue the use of the existing 69-kV transmission line and substation located within the existing Vantage operations area. The existing Vantage (Alligator Ridge) substation would be upgraded as necessary to accommodate the proposed SOA mining activities. The following two transmission lines and one associated substation would be developed within the proposed Vantage and Luxe areas.

A 69-kV transmission line would be constructed from the existing Vantage substation to the Vantage Pit to support electric shovel operations. The proposed transmission line, approximately 6,825 feet long, would be constructed within the proposed haul road disturbance. The proposed Vantage substation would be constructed within a proposed facility footprint; the site-specific location would be determined concurrent with facility design.

An additional 24.9-kV transmission line would be constructed from the existing Vantage substation to the proposed Gator process area. The proposed transmission line, approximately 3,760 feet long, with an associated 25-foot-wide disturbance corridor, would be established for maintenance access during operations where disturbance footprints have not been assigned for other facilities.

Transmission line design parameters and electrical power provider information would be the same as those discussed in Section 2.4.1.4, Transmission Lines and Substations (Redbird and Rat Areas).

Communication Sites

To establish a communication system throughout the proposed SOA, Barrick would construct five radio tower sites. Specific locations for radio tower sites have not yet been determined; however, Barrick proposes to bond for 5 acres of disturbance associated with radio tower sites within the proposed SOA. Prior to construction, Barrick would provide a map of the radio tower sites and a description of the buildings and masts that would be constructed at each site to the BLM and NDOW for review and concurrence. Radio tower specifications within the proposed SOA would be consistent with those described in Section 2.4.1.3, Communication Sites (Numbers Area).

Pre-construction survey requirements would be consistent with those described in Section 2.4.1.15, Proposed Exploration.

Water Supply

The estimated groundwater pumping required for the project is described in Section 3.3.2 and the locations of the water supply wells are shown on **Figure 3.3-14**. Water supply wells that would be used for groundwater production are listed in **Table 3.3-8**, and water pumping requirements are summarized in **Table 3.3-9** and illustrated in **Figure 3.3-15**.

Fences

Fencing specifications would be consistent with those described in Section 2.4.1.3, Fences (Numbers Area).

Ancillary Areas and Yards

Ancillary disturbance areas would be developed adjacent to the proposed Gator and Vantage HLFs. Ancillary disturbance adjacent to the Gator HLF would be utilized for administration, truck shop, warehouse, ready line, fuel/lube, and sanitary facilities. Other miscellaneous support facilities necessary for an active mining operation may be located within the ancillary disturbance areas. Although a patchwork of undisturbed vegetation may remain in these disturbed areas during operations, Barrick would bond for the entire ancillary disturbance area.

Diesel fuel and lubricants would be stored within the ancillary disturbance areas adjacent to the Gator HLF. To help prevent spills or chemical releases, standard operating procedures for fueling equipment would be observed. If spills or chemical releases occur, the fuel/lube transfer location would be managed using BMPs as part of the SWPPP (SOA PoO, Appendix H) and the Spill Contingency Plan (SOA PoO, Appendix J) (Barrick 2012b).

Buildings

The existing, permitted laboratory located within the proposed NOA would be utilized to support the proposed SOA project. Process buildings would be located adjacent to the proposed ponds within the Vantage and Gator process areas. The process buildings would be similar to existing, operating process buildings located at existing Mooney Basin within the proposed NOA.

Proposed Water Management

Pit Dewatering

A hydrological investigation outlining baseline hydrological data and groundwater model results was conducted within the proposed SOA project and summarized within the PoO (Appendix E) (Barrick 2012b). In summary, it is not expected that the groundwater table would be intercepted while mining in the pits located within the proposed Vantage and Luxe areas, and therefore, no dewatering activities are planned. As is the case with current operations, if isolated, perched, saturated zones are encountered, diversion ditches and sumps would be installed where necessary and feasible to maintain safe operating conditions within the pit. In the event mining does intercept the groundwater table which results in formation of a pit lake, the pit would be backfilled with carbonate-rich material above the projected groundwater rebound elevation.

Storm Water Management

Storm water would be managed in accordance with the SWPPP (SOA PoO, Appendix H) (Barrick 2012b). Storm water controls for construction, maintenance, and monitoring practices within the proposed SOA project would be consistent with those described in Section 2.4.1.3, Storm Water Management (Numbers Area).

2.4.2.4 Yankee Area

The following section outlines the development, reconfiguration, and/or expansion of each facility located within the proposed Yankee Area within the proposed SOA project under the Proposed Action. In summary, Barrick proposes to amend its existing SOA PoO to conduct the following activities within the proposed Yankee Area:

- Combine and expand the existing and reclaimed Blue, Blue Extension, Gray, Monitor, Olustee, Olustee Extension, West Davis, East Davis, Vicksburg, Yankee, SW Extension, Saddle, West Spur, East Spur, West Crusher, and East Crusher pits to form the proposed Yankee Pit;
- Expand the existing North RDA to form the proposed Yankee North RDA;
- Develop the proposed Yankee West RDA;
- Partially backfill the southern end of the proposed Yankee Pit above the original ground surface to form the proposed Yankee South RDA;
- Expand the existing Yankee HLF and develop associated Yankee process facilities, solution ponds, and storm water/event ponds;
- Improve the existing unnamed county road between the existing Alligator Ridge Mine and the existing Yankee Mine; and
- Expand and develop interpit, haul road, access road, and ancillary and support facility infrastructure, as detailed below.

Figures 2.4-3 and **2.4-4** illustrate the existing/authorized and proposed new disturbances and life-of-mine (full build-out), respectively, for the proposed Yankee Area under the Proposed Action. **Table 2.4-2** summarizes the existing/authorized and proposed surface disturbances for the proposed Yankee Area under the Proposed Action.

<u>Proposed Open Pits</u>

One existing open pit (i.e., Yankee Pit) would be expanded within the proposed Yankee Area.

Yankee Pit

The proposed Yankee Pit would combine and expand the following existing and reclaimed pits: Grant, Blue, Blue Extension, Gray, Monitor, Olustee, Olustee Extension, Yankee, East Davis, West Davis, Vicksburg, Saddle, SW Extension, West Spur, East Spur, West Crusher, and East Crusher. Patchworks of vegetation could remain between some of the existing pits and proposed pit expansions depending on detailed mine plans; however, it is assumed that the entire pit footprint would be disturbed for permitting and bonding purposes.

With the exception of the West Crusher and Olustee pits, the existing pits that would be affected by the development of the proposed Yankee Pit have been partially to completely backfilled with carbonate-rich material and reclaimed. Additionally, the proposed Yankee Pit expansion would remove portions of the existing, reclaimed North and Yankee RDAs. Leach material would be hauled to the proposed Yankee HLF; waste rock material would be hauled to the proposed Yankee North, Yankee West, or Yankee South RDAs.

A portion of the southern end of the proposed Yankee Pit would be backfilled with carbonate-rich material to the original ground surface with waste rock. This pit backfill area would form the base for a portion of the proposed Yankee South RDA. A detailed comparison between the existing, reclaimed, and released facilities versus the proposed pit configuration is presented in the SOA PoO (Figure 9) (Barrick 2012b).

The proposed Yankee Pit would remove an existing oil drill site operated under an oil and gas lease.

Table 2.4-46 summarizes the proposed open pit design parameters within the proposed Vantage and Luxe areas. **Table 2.4-47** summarizes anticipated/estimated leach material and waste rock material production quantity within the proposed Vantage and Luxe areas.

Table 2.4-46 South Operations Area Project Pit Design Parameters – Yankee Area[1]

Proposed Open Pit	Slope (degrees)	Length (ft)	Width (ft)	Depth (ft)	Pit Bottom Elevation (ft amsl)
Yankee	30-55	10,050	3,185	600	5,925

[1] Surface disturbance acreages are provided in **Table 2.4-2**.

Source: Barrick 2012b.

Table 2.4-47 South Operations Area Project Estimated Ore and Waste Rock Tonnages – Yankee Area[1]

Proposed Open Pit	Leach Material (MT)	Waste Material (MT)	Total (MT)
Yankee[1]	23	72	95
Total	**23**	**72**	**95**

[1] Values have been rounded to the nearest whole integer.

Source: Barrick 2012b.

Proposed Rock Disposal Areas

One existing RDA (i.e., Yankee North RDA) and one new RDA (i.e., Yankee West) would be developed within the proposed Yankee Area.

The percentage of PAG material for each RDA was determined based on the proposed SOA Project mine plan. **Table 2.4-48** summarizes ABA average values within the proposed Yankee Area.

Table 2.4-48 South Operations Area Project Static Acid-base Accounting Average Values – Yankee Area[1]

Proposed Mine Area	Waste Rock Material (MT)[2]	Average Acid Neutralizing Potential (kg/t)	Average Acid Generating Potential (kg/t)	Average Net Neutralizing Potential (APN) (kg/t)	Neutralizing Potential Ratio (NPR)
Yankee	72	312	22	+290	14.18

[1] By definition, ANP and NNP are the kg of calcium carbonate per metric ton of rock and have maximum values of 1,000. Similarly, AGP is the kg of sulfur per metric ton of rock and has a maximum value of 1,000. Higher ANP, NNP, NPR and lower AGP values are favorable and indicate a reduced likelihood for acid drainage. NNP values of 0 or less are considered PAG material.

[2] Values have been rounded to the nearest whole integer.

Source: Barrick 2013.

Yankee North, Yankee West, and Yankee South RDAs

The Yankee West and Yankee South RDAs would be constructed to accommodate waste rock material from the proposed Yankee Pit expansion. The Yankee North RDA would be expanded to the north, the south, and the west. Based on the static test results for waste rock samples as outlined in the baseline geochemical assessment and the Adaptive Waste Rock Management Plan, the Yankee area contains 92.0 percent carbonate-rich waste with an average NNP of 290 kg/t and a NPR of 14.18 (Barrick 2012b).

Table 2.4-49 summarizes proposed RDA height and capacity parameters, and originating source of waste rock material within the proposed Yankee Area.

Table 2.4-49 South Operations Area Project Rock Disposal Area Design Parameters – Yankee Area[1,2]

Rock Disposal Area	Height (ft)	Incremental Capacity (MT)[3]	Source of Waste Rock Material
Yankee North	350	58	Yankee Pit
Yankee West	225	15	Yankee Pit
Yankee South[4]	375	70	Yankee Pit

[1] Surface disturbance acreages are provided in **Table 2.4-2**.

[2] Elevations were not provided because designs are preliminary and subject to change based on detailed mine planning, project economics, geotechnical considerations, and other engineering design considerations. The RDAs would be constructed within the proposed footprints with an approximate height above original ground surface as listed above.

[3] Values have been rounded to the nearest whole integer.

[4] A portion of the southern end of the proposed Yankee Pit would be backfilled with carbonate-rich material to the original ground surface with approximately 9.6 MT of waste rock material. This pit backfill would form the base for a portion of the proposed Yankee South RDA.

Source: Barrick 2012b.

Proposed Ore Processing Facilities

One existing HLF (i.e., Yankee HLF) would be expanded, and an associated process facility, solution ponds, and storm water/event ponds would be developed within the proposed Yankee Area.

Yankee HLF

The proposed Yankee HLF would be constructed southeast of the proposed Yankee Pit. The proposed Yankee HLF would replace the existing and reclaimed Yankee HLF. The existing heap material would be removed and restacked onto the proposed HLFs. The removal and disposal of the existing HLF liners would be determined on a case-by-case basis in consultation with the State of Nevada.

Design specifications for the proposed SOA project HLFs and associated facilities would be consistent with those described above for the proposed NOA project HLFs.

Table 2.4-50 summarizes proposed HLF height and capacity parameters within the proposed Yankee Area.

Table 2.4-50 South Operations Area Project Heap Leach Facility Design Parameters – Yankee Area[1]

Heap Leach Facility	Heap Height[2] (ft)	Incremental Capacity (MT)[3]
Yankee	250	36

[1] Surface disturbance acreages are provided in **Table 2.4-2**.

[2] Height above original ground surface.

[3] Values have been rounded to the nearest whole integer.

Source: Barrick 2012b.

New process ponds would be constructed within the proposed process areas associated within the proposed Yankee Area. **Table 2.4-51** summarizes the conceptual pond design parameters within the proposed Yankee Area. Design specifications for the proposed process and storm water ponds would be consistent with those described above for the proposed NOA project.

Table 2.4-51 South Operations Area Project Conceptual Pond Design Parameters – Yankee Area

Pond	100-year, 24-hour Storm Event (inches)[1]	Pond Depth (ft)	Operating Capacity (million gallons)[2]
Yankee Process	2.9	22	25
Yankee Storm Water/Event	2.9	20	11

[1] Storm event source data from the NOAA Atlas 14, Volume 1, Version 5 (2011).

[2] Values have been rounded to the nearest whole integer.

Source: Barrick 2012b.

Proposed Interpit Areas, Haul Roads, and Access Roads

The following proposed interpit areas, haul roads, and access roads would be developed and/or expanded in support of various facilities within the proposed Yankee Area. Existing/authorized interpit areas, haul roads, and access roads would continue to be used. Typical in-pit haul road cross-sections are presented as a component of the open pit typical within the SOA PoO (Figure 2) (Barrick 2012b).

Interpit Areas

Per existing authorizations, Barrick would continue the use of existing haul roads within the proposed Yankee Area. Additional interpit areas would be developed within the proposed Yankee Area. Interpit specifications including permitting and operational use would be consistent with those described in Section 2.4.1.4, Interpit Areas (Redbird and Rat Areas).

Haul Roads

The existing haul roads located within the proposed Yankee Area would be removed as part of the proposed Yankee Pit disturbance. Additionally, one new haul road extending between the proposed Yankee South RDA and Yankee HLF would be developed within the proposed Yankee Area. Haul road, haul road berm, temporary ramp, and secondary road design parameters would be the same as those discussed in Section 2.4.1.4, Haul Roads (Redbird and Rat Areas).

Access Roads to Monitoring Wells, Water Wells, and Piezometers

Per existing permit authorizations, Barrick would continue the use of existing access roads to the existing/authorized monitoring well, water wells, and piezometer sites within the proposed Yankee Area. No proposed monitoring well or piezometer sites would be developed; therefore, the development of additional access roads is not anticipated.

Public Access Roads

The proposed SOA project can be accessed via three public access routes: 1) from Elko via State Highway 228 south; 2) from Ely via U.S. Highway 50 to White Pine County Road 3 (Long Valley Road); and 3) from Eureka via U.S. Highway 50 to State Highway 892 (Strawberry Road). **Figure 2.4-6** illustrates public access roads and possible traffic control points which would provide monitored access within the proposed SOA. Public access would be restricted to existing roads that currently cross active mining areas in accordance with MSHA and other applicable requirements. Public access would be controlled with fences and locked gates or other physical methods to ensure public safety. The Traffic Management Plan describes existing public access roads, public access road reroutes, and mine access/public access intersections and traffic controls within the proposed SOA (Appendix I) (Barrick 2012b).

The existing unnamed county road between the Yankee and Vantage HLFs would be widened, upgraded, and maintained to allow for transporting heavy equipment between operations areas, as necessary. Transport of heavy equipment between operations areas may result in temporary public access restrictions. Barrick would consult with White Pine County and obtain required permits prior to excavation and road maintenance.

Transportation Utility Corridor

The development of the proposed TUC within the proposed SOA is discussed in Section 2.4.2.3, Transportation Utility Corridor (Vantage and Luxe Areas).

<u>Proposed Ancillary and Support Facilities</u>

The following proposed ancillary and support facilities, including GMSs, transmission lines, water supply, fences, ancillary areas and yards and buildings would be developed, reconfigured, or expanded within the proposed Yankee Area. Per existing permit authorizations, Barrick would continue the use of existing ancillary and support facilities within the proposed Yankee Area.

Growth Media Stockpiles

Per existing permit authorizations, Barrick would continue the use of existing GMSs within the proposed Yankee Area. Additional GMSs would be developed adjacent to proposed facilities within the proposed Yankee Area. Growth media stockpiling practices within the proposed Yankee Area would be consistent with those described in Section 2.4.1.4, Growth Media Stockpiles (Redbird and Rat Areas).

Borrow Pits

There are no proposed designated borrow pit locations within the proposed Yankee Area; however, Barrick anticipates continuing the current practice of developing borrow areas from authorized disturbance areas, where the appropriate material is available. Borrow materials would be used to supply road base, gravel, heap overliner, etc. to support mining and processing operations.

Transmission Lines and Substations

Per existing permit authorizations, Barrick would continue the use of the existing 69-kV transmission line and substation located within the proposed SOA project. The following two transmission lines and one associated substation would be developed within the proposed Yankee Area.

An additional 24.9-kV transmission line would be constructed from the existing Vantage substation to the proposed Gator process area. The proposed transmission line, approximately 3,760 feet long, with an associated 25-foot-wide disturbance corridor, would be established for maintenance access during operations where disturbance footprints have not been assigned for other facilities.

An additional 69-kV transmission line would be constructed from the existing 69-kV transmission line to the Yankee process area, where a substation would be established. The proposed transmission line, approximately 525 feet long, with an associated 25-foot-wide disturbance corridor, would be established for maintenance access during operations where disturbance footprints have not been assigned for other facilities. The proposed Yankee substation would be constructed within the proposed Yankee process area located east of the Yankee HLF.

Transmission line design parameters and electrical power provider information would be the same as those discussed in Section 2.4.1.4, Transmission Lines and Substations (Redbird and Rat Areas).

Communication Sites

To establish a communication system throughout the proposed Yankee Area, Barrick would construct five radio tower sites. Specific locations for radio tower sites have not yet been determined; however, Barrick proposes to bond for 5 acres of disturbance associated with radio tower sites within the proposed SOA. Prior to construction, Barrick would provide a map of the radio tower sites and a description of the buildings and masts that would be constructed at each site to the BLM and NDOW for review and concurrence. Radio tower specifications within the proposed SOA would be consistent with those described in Section 2.4.1.3, Communication Sites (Numbers Area).

Pre-construction survey requirements would be consistent with those described in Section 2.4.1.15, Proposed Exploration.

Water Supply

The estimated groundwater pumping required for the project is described in Section 3.3.2 and the locations of the water supply wells are shown on **Figure 3.3-14**. Water supply wells that would be used for groundwater production are listed in **Table 3.3-8**, and water pumping requirements are summarized in **Table 3.3-9** and illustrated in **Figure 3.3-15**.

Fences

Fencing specifications would be consistent with those described in Section 2.4.1.3, Fences (Numbers Area).

Ancillary Areas and Yards

Per existing permit authorizations, Barrick would continue the use of the existing ancillary area located adjacent to the proposed Yankee HLF. The ancillary disturbance area adjacent to the proposed Yankee HLF would be expanded to be utilized as a ready line and fuel/lube area. Other miscellaneous support facilities necessary for an active mining operation may be located within the ancillary disturbance areas. Although a patchwork of undisturbed vegetation may remain in these disturbed areas during operations, Barrick would bond for the entire ancillary disturbance area.

Diesel fuel and lubricants would be stored within the ancillary disturbance area adjacent to the Yankee HLF. To help prevent spills or chemical releases, standard operating procedures for fueling equipment would be observed. If spills or chemical releases occur, the fuel/lube transfer location would be managed using BMPs as part of the SWPPP (SOA PoO, Appendix H) and the Spill Contingency Plan (NOA PoO, Appendix J) (Barrick 2012b).

Buildings

The existing, permitted laboratory located within the proposed NOA would be utilized to support the proposed SOA project. Process buildings would be located adjacent to the proposed ponds within the Yankee process area. The process buildings would be similar to existing, operating process buildings located at proposed Mooney Basin within the proposed NOA.

Proposed Water Management

Pit Dewatering

A hydrological investigation outlining baseline hydrological data and groundwater model results was conducted within the proposed SOA project and summarized within the PoO (Appendix E) (Barrick 2012b). In summary, it is not expected that the groundwater table would be intercepted while mining in the pits located within the proposed Yankee Area, and therefore, no dewatering activities are planned. As is the case with current operations, if isolated, perched, saturated zones are encountered, diversion ditches and sumps would be installed where necessary and feasible to maintain safe operating conditions within the pit. In the event mining does intercept the groundwater table which results in formation of a pit lake, the pit would be backfilled with carbonate-rich material above the projected groundwater rebound elevation.

Storm Water Management

Storm water would be managed in accordance with the SWPPP (SOA PoO, Appendix H) (Barrick 2012b). Storm water controls for construction, maintenance, and monitoring practices within the proposed SOA project would be consistent with those described in Section 2.4.1.3, Storm Water Management (Numbers Area).

2.4.2.5 Open Pit Mining Overview

Open pit mining techniques within the proposed SOA project would be consistent with those described in Section 2.4.1.11, Open Pit Mining Overview (NOA project). Typical open pit cross-sections are presented within the SOA PoO (Barrick 2012b).

Proposed Drilling and Blasting

Drilling and blasting techniques within the proposed SOA project would be consistent with that described in Section 2.4.1.11, Drilling and Blasting (NOA project).

Proposed Loading and Hauling

Trucks would be used to haul leach material to the HLFs and waste rock to the RDAs. Low-grade leach material may be temporarily stored in stockpiles or on a selected portion of the RDAs for later transport and processing. In addition to new equipment purchased or leased specifically for the proposed SOA project, existing equipment from the NOA or other Barrick properties would be used for the proposed SOA project. A list of anticipated mining equipment requirements at peak operations within the proposed SOA PoO boundary is provided in **Table 2.4-52**.

Table 2.4-52 South Operations Area Project List of Proposed Mobile Surface Equipment

Unit	Quantity
P&H 2800 Electric Shovel (or equivalent)	2
Hitachi EX5500 Hydraulic Shovel (or equivalent)	2
Hitachi EX3600 Hydraulic Shovel (or equivalent)	1

Table 2.4-52 South Operations Area Project List of Proposed Mobile Surface Equipment

Unit	Quantity
Caterpillar 994 Loader (or equivalent)	1
240-ton Haul Trucks	23
190-ton Haul Trucks	2
150-ton Haul Trucks	8
Atlas Copco PitViper 271 Drill (or equivalent)	3
Atlas Copco DML Drill (or equivalent)	5
Atlas Copco DMM Drill (or equivalent)	3
Caterpillar D9 Dozer (or equivalent)	2
Caterpillar D10 Dozer (or equivalent)	2
Caterpillar D10T Dozer (or equivalent)	5
Caterpillar 834 Wheeled Dozer (or equivalent)	3
Caterpillar 854 Wheeled Dozer (or equivalent)	2
Caterpillar 16H Grader (or equivalent)	2
Caterpillar 16M Grader (or equivalent)	5
Water Truck	4
Caterpillar 992 Loader (or equivalent)	1
Komatsu 800 Track Hoe (or equivalent)	1

Source: Barrick 2012b.

2.4.2.6 Rock Disposal Area Overview

Rock disposal techniques including waste rock characterization and management within the proposed SOA project would be consistent with those described in Section 2.4.1.12, Rock Disposal Area Overview (NOA project). Typical RDA cross-sections are presented within the SOA PoO (Barrick 2012b).

2.4.2.7 Ore Processing Overview

Ore processing techniques within the proposed SOA project would be consistent with those described in Section 2.4.1.13, Ore Processing Overview (NOA project). Typical HLF cross-sections are presented within the SOA PoO (Barrick 2012b).

2.4.2.8 Process Solution Ponds, Carbon Columns, and Support Facilities

Process solution pond, carbon column, and support facilities descriptions and operational-related activities including loaded carbon transportation and processing within the proposed SOA project would be consistent with those described in Section 2.4.1.14, Process Solution Ponds, Carbon Columns, and Support Facilities (NOA project).

2.4.2.9 Proposed Exploration

Ongoing exploration activities would be conducted within and adjacent to the proposed SOA project boundary, per existing approvals, to identify and delineate additional ore reserves. Drilling also would be conducted to confirm the grade of ore deposits or confirm an area contains no economically recoverable

gold (condemnation drilling). These activities would consist of geologic or geophysical surveys, access road grading or construction, and exploration or condemnation hole drilling programs.

Under the Proposed Action, Barrick would reallocate exploration disturbance previously apportioned to the Regional Exploration PoO to the SOA project PoO. Although the boundary of the Regional Exploration PoO would not change, the mining PoO boundaries would, and therefore a reconciliation would occur to eliminate overlapped acreage. As a result, approximately 10 acres of exploration-related disturbance previously allocated to the Regional Exploration PoO would become part of the proposed SOA project PoO. The transferred disturbance (10 acres) would be applied to the proposed exploration-related disturbance for the SOA project (159 acres). Appropriate permitting actions related to the Regional Exploration PoO would be conducted following approval of this EIS.

Barrick proposes to conduct additional exploration activities within the Vantage and Yankee operations areas. At this time, a specific exploration program has not been defined; however, Barrick proposes to bond for up to 90 additional acres of exploration disturbance (which includes the 10 acres of existing exploration-disturbance transferred from the Regional Exploration plan boundary) associated with exploration roads and drill pads within the proposed SOA.

Drilling specifications within the proposed SOA would be consistent with those described in Section 2.4.1.15, Proposed Exploration (NOA project).

2.4.2.10 Petroleum Contaminated Soil

Collected PCS and ACS would be managed in accordance with a NDEP-approved PCS Management Plan. Typically PCS and ACS would be collected and transferred and segregated at a Holding Pad or a provisional, short-term on-site disposal location until screening was conducted to determine suitability for on-site long-term management. Any PCS or ACS which is not suitable for long term on-site management would require the implementation of any of the options in the contingency plan, including off-site disposal. At present, a holding pad location has not been designated. Provisional placement and disposal locations for PCS and ACS include the Vantage RDA and Yankee South RDA.

PCS and ACS sampling, assessment criteria, and treatment methodologies would be consistent with those described above for the proposed NOA project (see Section 2.4.1.16, Petroleum Contaminated Soils). A Petroleum Contaminated Soils Plan would be formalized through the NDEP permitting process prior to commencement of mining activities for the proposed SOA project.

2.4.2.11 Hazardous Materials

The following section describes hazardous materials transport and storage, emergency planning and response, spill containment, and hazardous and non-hazardous waste management within the proposed SOA project. All existing/authorized and proposed facilities for the proposed SOA project described herein are illustrated in **Figures 2.4-3** and **2.4-4**. Existing/authorized and proposed surface disturbance acreages for all hazardous and non-hazardous material-related facilities within the proposed SOA are presented in **Table 2.4-2**.

<u>Chemical Transportation and Storage</u>

Lime silos, with capacities of approximately 400 tons, would be located at the Vantage, Gator, and Yankee HLFs. As described in the Spill Contingency Plan (SOA PoO, Appendix J), the primary chemicals and fuels to be used as part of the proposed activities include sodium cyanide, diesel fuel, ammonium nitrate, sodium hydroxide, propane, lime, gasoline, carbon, and anti-scalant (Barrick 2012b). **Table 2.4-53** summarizes the current and proposed usage estimates for chemical consumables necessary to construct and operate the proposed SOA project. Trucks would transport bulk chemicals and supplies to the SOA on an as-needed basis using the following transportation route: from Ely or

Eureka via U.S. Highway 50 to Long Valley Road. **Figure 2.4-6** illustrates each aforementioned transportation route to the SOA. No restrictions on delivery times are proposed.

Storage area containment and regulations for the proposed SOA project would be consistent with those described in Section 2.4.1.17, under Chemical Transportation and Storage (NOA project).

Table 2.4-53 Current and Proposed Usage of Primary Chemicals and Fuels Classified as Hazardous Materials; South Operations Area

Material	Proposed Average Annual Usage	Proposed Deliveries per Year	Proposed Storage Amount	Storage Method	Location of Material	Material Use
Diesel Fuel and Gasoline	7,500,000 gallons	365	25,000 gallons	Bulk Tank	Fuel Islands	Equipment fuel
Ethylene Glycol	4,500 gallons	4	1,500 gallons	Bulk Tank	Truck Shop	Equipment coolant
Methanol	5,000 gallons	1	5,000 gallons	Bulk Tank	Fuel Islands	Drill lubricant
Propane	40,000 gallons	3	20,000 gallons	Bulk Tank	Admin/Shop Areas/Process Buildings	Heating
Sodium Cyanide	1,600,000 gallons	256	31,000 gallons	Bulk Tank	Process Plants	Metals Recovery
Antiscalant	10,000 gallons	2	10,500 gallons	Bulk Tank	Process Plants	Metals Recovery
Ammonium Nitrate Fuel Oil	750,000 pounds	26	25 tons	Bulk Tank	Shop Areas and Near Mining Areas	Blasting operations
Calcium Oxide (pebble lime)	14,000 tons	350	400 tons	Bulk Tank	Near Heaps	Ore pH control

Spill Prevention and Emergency Preparedness and Response

Emergency planning and response guidelines and procedures for the proposed SOA project would be consistent with those described in Section 2.4.1.17, Spill Prevention and Emergency Preparedness and Response (NOA project). The Emergency Response Plan is located within the SOA PoO (Appendix L) (Barrick 2012b). Reporting and notification for qualifying releases are detailed within the Spill Contingency Plan (SOA PoO, Appendix J) (Barrick 2012b).

Hazardous Waste Management

Hazardous waste management is subject to specific requirements that are dependent upon the amount of hazardous waste produced at a facility in 1 calendar month. The proposed SOA project is expected to be classified as a Conditionally Exempt Small Quantity Generator (eSqG) or a SQG of hazardous waste as defined by the RCRA. Should hazardous waste be generated in quantities exceeding the SQG threshold, Barrick would obtain a hazardous waste identification number from the USEPA.

Temporary on-site hazardous waste storage areas would be utilized for hazardous waste generated. Off-site, manifested transfers to treatment, storage, and disposal facilities would occur in accordance

with the RCRA, NDEP, and NDOT regulations. Hazardous waste management practices would be similar to those employed within the proposed NOA (see Section 3.4.1.17, Hazardous Waste Management).

Non-hazardous/Solid Waste Management

Non-hazardous solid waste would be disposed in on-site class III-waivered landfills located within the proposed Vantage and Yankee South RDAs. The landfills would accept approved non-hazardous solid wastes including glass, plastics, waste paper, wood, and other non-putrescible wastes. Maintenance activities and inspections would be similar to those employed within the proposed NOA (see Section 3.4.1.17, Hazardous Waste Management).

2.4.2.12 Public Safety

The proposed SOA PoO boundary would only be partially fenced due to existing topography and the size of the SOA. Barrick would provide public safety controls for the mine site to limit public access to the extent necessary (see Traffic Management Plan [SOA PoO, Appendix I]) (Barrick 2012b). Public safety measures within the proposed SOA would be consistent with those described in Section 2.4.1.18, Public Safety (NOA project).

2.4.3 Design Features and Applicant-committed Environmental Protection Measures for the Proposed North and South Operations Area Projects

During construction and operation of the proposed project, Barrick would implement design features and applicant-committed environmental protection measures (ACEPMs) to mitigate potential impacts to air, land, water, wildlife, cultural resources, and human resources. To prevent unnecessary or undue degradation to the environment per 43 CFR 3809.420, these design features and ACEPMs would be considered standard operating procedures for both the proposed NOA and SOA projects, unless otherwise noted. Design features and ACEPMs are presented in **Table 2.4-54**. Some measures therein are required by regulation and others have been developed site-specifically to address BLM or industry Best Management Practices (BMPs). The design features and ACEPMs also were developed to address public scoping comments. The BLM's BMPs from the Ely District Resource Management Plan (RMP) for the proposed NOA and SOA projects are presented and identified as such in **Table 2.4-54**.

Table 2.4-54 Summary of Design Features and Applicant-committed Environmental Protection Measures

Critical Element/ Resource	Potential Concerns	Design Features and Applicant-committed Environmental Protection Measures
Geology and Minerals	• Unsuccessful reclamation • Geotechnical instability	• An Adaptive Waste Rock Management Plan as been developed. The Adaptive Waste Rock Management Plan provides a conceptual model of an RDA; characterizes waste rock geochemistry; describes the mine plan and anticipated waste rock tonnages by project area; summarizes results of environmental monitoring in existing RDAs (e.g., water quality and waste rock geochemical monitoring); discusses the strategy for classification, in-pit identification, mine planning, and overburden placement; describes water and rock monitoring programs; and provides an overview of proposed closure of the facility including design and placement of covers. • As outlined within the Adaptive Waste Rock Management Plan, PAG material would be managed and monitored to prevent environmental impacts to waters of the state and minimize erosion. Waste rock handling, construction and reclamation are associated components of effective waste rock management in precluding adverse water quality impacts due to migration of acidity or metals. Per the Adaptive Waste Rock Management Plan, special waste handling methods and/or enhances reclamation techniques (e.g., rock placement, grading of the facility to control surface water, construction of covers and reclamation including vegetation establishment) would be employed. • A revised sampling approach was developed which creates a single comprehensive plan that applies to all mine areas that satisfies all waste rock monitoring requirements for both the BLM and NDEP. To determine the potential for acid generation, a quarterly composite sample would be analyzed for each active pit by compositing equal-sized subsamples from selected blast holes drilled in waste over the quarter. Quarterly composite samples would be analyzed for paste pH, static test by Modified Sobek and NDEP profile 1. If the static tests indicate the potential to produce acid, per the NDEPs guidance document *Waste Rock and Overburden Evaluation*, NDEP would be notified per the conditions of the permit and kinetic testing would be completed. The composite sampling would address NDEP requirements and characterize average waste rock conditions. • Mineral exploration and development drill holes, production wells, and monitoring wells would be closed in accordance with NAC 534 when no longer in use to prevent contamination of surface water and groundwater resources.

Table 2.4-54 Summary of Design Features and Applicant-committed Environmental Protection Measures

Critical Element/ Resource	Potential Concerns	Design Features and Applicant-committed Environmental Protection Measures
		• The potential for both kinematic failures and mass failures under static and seismic conditions and the consequences of such failures would be evaluated and considered in the mine design. • Geotechnical monitoring, consisting of geologic structure mapping, groundwater monitoring, and slope stability analyses, would be conducted during active mining to assist in optimizing final pit designs. • Slope movement monitoring would be initiated to evaluate the safety of the active open pit highwalls. • Blasting, detrimental to the significant characteristics of archaeological or historical values, recreation areas, known caves, production water wells, or springs, has already been addressed through the appropriate setback distances or would not be permitted. • The BLM Authorized Officer would be notified upon completion of reclamation work so timely compliance inspections can be completed. • Facilities would be designed and constructed to meet or exceed the BLM, NDEP, NDOW, and NDWR design criteria. • Facilities would be sited to minimize run-off and run-on from hydrologic features.
Water Resources/ Water Quality and Quantity	• Impacts to groundwater • Erosion (water) • Disruption of wetlands • Loss of spring recharge • Loss of wetland vegetation • Storm Water	• Facilities would be designed and constructed to meet or exceed the BLM, NDEP, NDOW, and NDWR design criteria. • RDAs would be designed to prevent degradation of waters of the state • Monitoring wells would be installed near expanded RDAs. • As outlined within the Water Monitoring and Management Plan (Appendices H and G, NOA and SOA, respectively), the existing groundwater monitoring program within the NOA would be coupled with additional monitoring wells and piezometers to provide coverage for the proposed site facilities. Sampling would be performed in accordance with the monitoring, sampling, and analysis requirements of the WPCPs. Samples would be analyzed for the NDEP Profile I constituents. The analytical results would be tracked for pH, sodium, WAD cyanide, nitrate + nitrate (total as N), and total dissolved solids as leading indicators of potential releases from the Processing Facilities. If the sample results indicate exceedances of established limits of any of the analytes, reporting to the

Table 2.4-54 Summary of Design Features and Applicant-committed Environmental Protection Measures

Critical Element/ Resource	Potential Concerns	Design Features and Applicant-committed Environmental Protection Measures
		NDEP as outlined in the WPCP would occur. • To ensure quality assurance practices and protocols relating to the regulatory requirements in the permits, water sampling would be conducted as outlined in the Sampling and Analysis Plan. Procedures outlined in the Sampling and Analysis Plan are based on acceptable regulatory and industry standards and is in conformance with the requirements developed under the NDEP BMRR and WPCP programs. • Herbicide mixing, and rinsing of herbicide containers and spray equipment, would be conducted only in areas that are a safe distance from environmentally sensitive areas and points of entry to waterbodies (e.g., storm drains, irrigation ditches, streams, lakes, or wells). • Mineral exploration and development drill holes, production wells, and monitoring wells would be closed in accordance with NAC 534 when no longer in use to prevent contamination of groundwater resources. • Erosion and sediment transport from proposed facilities and disturbed areas would be limited during construction and operation in accordance with the Nevada General Stormwater Permit NVR300000 and the SWPPP (NOA PoO, Appendix I and SOA PoO, Appendix H). Erosion and sediment transport practices may include, but are not limited to, diversions and routing of storm water away from mining and process components using accepted engineering practices, such as diversion ditches, sediment traps, and rock and gravel covers. • Current erosion controls would be maintained, such as preservation of existing vegetation as possible, recontouring slopes, dust control, and implementation of specific erosion BMPs as identified in the SWPPP. Erosion control berms, silt fence, straw bales, detention basins, or other features would be installed as necessary in areas prone to erosion. • Following construction activities and in accordance with the BLM requirements, areas such as GMSs would be seeded during the next seasonal seeding activity on-site. • Concurrent reclamation would be conducted to accelerate stabilization of disturbed areas where practicable. • Quality assurance/quality control (QA/QC) plans would be prepared according to the

Table 2.4-54 Summary of Design Features and Applicant-committed Environmental Protection Measures

Critical Element/ Resource	Potential Concerns	Design Features and Applicant-committed Environmental Protection Measures
		NDEP requirements for the WPCP applications; and submitted to the BLM prior to construction. For the HLFs and process ponds, QA/QC plans would be developed in conjunction with the project construction contracts, and an independent QA/QC contractor would be used. Placement of the heap leach overliner would be performed under supervision; the qualifications of the testing company, material specifications, and testing frequency would be described in the QA/QC plans. • Process components would be designed, constructed, and operated in accordance with NDEP regulations and BLM 40 CFR 3809 regulations. To minimize impacts to water resources, the proposed HLFs would be designed and operated as zero-discharge facilities, with a composite liner system in accordance with NDEP criteria. Waste rock material would be managed in accordance with the Adaptive Waste Rock Management Plan. Barrick would conduct geochemical evaluations of the waste rock in accordance with applicable water pollution control permits. The geochemical characterization program would provide representative information to evaluate the potential to degrade waters of the state. • The network of groundwater wells would be expanded to further characterize the groundwater quality and to monitor groundwater elevations within the NOA. Barrick would use the monitoring data to update the Adaptive Waste Rock Management Plan, as necessary. • BLM Ely District RMP Water Resource BMPs: o Access roads and fords that cross stream channels would be constructed to BLM road standards. o New road or existing road improvements would not occur within 300 feet of a stream channel unless authorized by the BLM Field Manager or Authorized Officer. o Stream crossings on travel routes and trails would be limited to the minimal number necessary to minimize sedimentation and compaction. The BLM Authorized Officer would determine if any impacts need to be rehabilitated by the permittee.

Table 2.4-54 Summary of Design Features and Applicant-committed Environmental Protection Measures

Critical Element/ Resource	Potential Concerns	Design Features and Applicant-committed Environmental Protection Measures
Soil Resources	• Soil erosion (wind and water)	• The project Reclamation Plan would be implemented which addresses earthwork and recontouring, revegetation and stabilization, draindown and long-term drain down management, and include monitoring operations necessary to satisfactorily reclaim the proposed disturbance including: roads, process ponds, heaps, stockpiles, buildings, and equipment. This plan would be consistent with the stipulated post-mining land uses. • Suitable growth media would be identified, salvaged, and stockpiled during open pit, RDA, and HLF development for subsequent use in reclamation to provide for re-establishment of vegetation. Following stripping, growth media would be stockpiled within the proposed disturbance areas or within areas designated for GMSs. GMSs would be located such that mining operations would not disturb the stockpiles. Alternatively, growth media may be transported to and redistributed on mine-related disturbance areas undergoing concurrent reclamation, such as RDAs. • Where suitable as a growth media, surface soils and some alluvial material in the open pit would be managed as a growth media resource and removed, stockpiled, and replaced during reclamation. • When preparing the site for reclamation, appropriate BMPs as determined appropriate for site-specific conditions would be included. • Existing roads would be used to the extent practicable. • Growth media would be stored in stockpiles. • Upon completion or temporary suspension of mining operations, drill holes and trenches would be backfilled and the area would be recontoured to the approximate natural slope with slopes at 3H:1V or to the original topography. • To minimize wind and water erosion, GMSs would be seeded with an interim seed mixture if stockpiles would remain over the growing season. Diversion channels and/or berms would be constructed around the stockpiles as needed to prevent erosion from overland runoff. • Silt fences or staked straw bales would be used as necessary to contain sediment liberated from direct precipitation. • Revegetation of disturbed areas would be conducted as soon as practical to reduce the potential for wind and water erosion, minimize impacts to soils and vegetation, help

Table 2.4-54 Summary of Design Features and Applicant-committed Environmental Protection Measures

Critical Element/ Resource	Potential Concerns	Design Features and Applicant-committed Environmental Protection Measures
		prevent the spread of noxious weeds and invasive species in disturbance areas, and facilitate post-mining land uses. • Concurrent reclamation would be conducted to the extent practical to accelerate revegetation of disturbance areas. • Sediment and erosion control features as well as revegetated areas would be inspected periodically to ensure long-term erosion control and successful reclamation.
Vegetation Resources	• Loss of native vegetation	• Removal and disturbance of vegetation would be kept to a minimum through construction site management. • Reclaim disturbances with appropriate interim and final seed mixtures. • Ensure seed mixes are approved by the BLM Authorized Officer prior to planting. Seeding techniques would be approved by the BLM Authorized Officer. • Native species that are representative of the indigenous species present in the adjacent habitat would be used for reclamation. Possible exceptions would include use of non-native species for use as temporary cover crop to out-compete weeds. Ensure site specific seed mixes are approved by the BLM Authorized Officer prior to planting. • Interim and final seed mixtures, hay, straw, and hay/straw products would be certified free of plant species listed on the Nevada noxious weed list. • Curl-leaf mountain mahogany (*Cercocarpus ledifolius*), single-leaf pinyon pine (*Pinus monophyllia*) and juniper (*Juniperus osteosperma*) trees would be removed only as necessary in proposed disturbance areas. • BLM Ely District RMP Vegetation Resource BMP: o An area would be considered to be satisfactorily reclaimed when disturbed areas have been recontoured to blend with the natural topography, erosion has been stabilized, and an acceptable vegetative cover has been established in accordance with Nevada Guidelines for Successful Revegetation prepared by NDEP, BLM, and the U.S. Department of Agriculture Forest Service (USFS).
Noxious Weeds and Invasive Species	• Increasing weed infestation from existing local sources • Introduction of new weed	• A weed control program would be conducted for the proposed NOA and SOA projects in accordance with the Noxious Weed Control Plan. • Barrick would work with the BLM and the Tri-County Weed District to avoid the spread of

Table 2.4-54 Summary of Design Features and Applicant-committed Environmental Protection Measures

Critical Element/ Resource	Potential Concerns	Design Features and Applicant-committed Environmental Protection Measures
	infestations by importing new seed sources from equipment • Herbicide application • Inspection of source sites such as borrow pits, fill sources, or gravel pits used to supply inorganic materials • Construction site management	invasive, nonnative species in the area affected by proposed activities, and Barrick also would work in cooperation with the Newark Valley/Long Valley Cooperative Weed Management Group. The weed control program would be conducted in the NOA and SOA in accordance with the Noxious Weed Control Plan presented in the NOA and SOA PoOs (Barrick 2012a,b) Appendix Q. • Noxious weed surveys would be conducted to determine the status of noxious weed infestations along access routes and in areas of proposed disturbance. • Surveying the proposed disturbance area would be done prior to construction to determine if invasive weeds already exist. • Employees and contractors would be educated to identify noxious weeds and invasive species that could occur in the areas to be disturbed. • Equipment operators would be educated to recognize and avoid weed areas. • Should noxious weeds and invasive species be identified, Barrick would take appropriate measures to avoid their spread in accordance with the Noxious Weed Control Plan. • When maintaining unpaved roads on BLM-administered lands, avoid the unnecessary disturbance of adjacent native vegetation. Grade shoulders or ditches only when necessary to provide for adequate drainage. Minimize the width of grading operations. • Areas of concern would be flagged in the field by a weed scientist of qualified biologist to prevent employees from driving through a stand of listed noxious weeds. • Vehicle and equipment inspection would occur prior to entering the site. • Driving through established weed areas would be avoided when practicable. • Segregate growth media that may contain noxious weed seeds from growth media not containing noxious weed seeds. • GMSs would be seeded as soon as practical with an interim seed mix. • Certified weed-free interim and final seed mixes, hay, straw, and other organic products used for reclamation would be used. • A BLM-recommended seed mix would be used to reduce invasive species over time by developing and maintaining desired plant communities.

Table 2.4-54 Summary of Design Features and Applicant-committed Environmental Protection Measures

Critical Element/ Resource	Potential Concerns	Design Features and Applicant-committed Environmental Protection Measures
		• Reclamation would normally be accomplished with native seeds. • Methods used to accomplish weed objectives would consider seasonal distribution of large wildlife species. • Construction equipment would be washed down to prevent the transfer of noxious and undesirable weed seed from other areas when necessary and practicable.
Wildlife Resources	• Migratory bird nesting • Active raptor nests • Mule deer migration	• To comply with the Migratory Bird Treaty Act (MBTA) and minimize the opportunity for "take " due to nest abandonment or cessation of avian nesting/breeding activities, surveys would be conducted prior to ground disturbance within the avian nesting/breeding season (March 15 to July 31) to determine the presence or absence of migratory avian species and eagles. Barrick would have a qualified biologist survey for the presence of active nests or breeding activity within one week prior to land clearing, surface disturbance, and other disruptive activities. If active migratory bird nests are located during the avian breeding season, or if other compelling evidence of nesting is observed (mating pairs, territorial defense, carrying nesting material, transporting of food), the area would be avoided or buffer zones would be established in consultation with the BLM. • Barrick would coordinate with the USFWS to determine if an Avian Protection Plan, Bird and Bat Conservation Strategy, and/or Eagle Conservation Plan is required. • Ground disturbance would be minimized where possible to retain foraging habitat and maintain production by not interfering with normal breeding, feeding, or sheltering. Growth media would be salvaged and stockpiled for future reclamation to restore the disturbed areas to post-mining land uses. At the end of operations, the proposed NOA and SOA projects would be closed and reclaimed according to a plan approved by the BLM and NDEP. The closure and reclamation plans would be designed to return areas to the post-mining land uses and to stabilize the process components to protect water resources. Where possible, reclamation would be performed concurrently to reduce the duration of disturbance and to accelerate the return to post-mining land uses. • Current science, guidelines, and methodologies (APLIC 2006, 2012 would be used for new transmission lines to minimize raptor and other bird electrocution and collision potential.

Table 2.4-54 Summary of Design Features and Applicant-committed Environmental Protection Measures

Critical Element/ Resource	Potential Concerns	Design Features and Applicant-committed Environmental Protection Measures
		• Reclamation activities would consider the needs of wildlife (e.g., placement of rock piles or other cover for rodents and perching raptors) and include native seed species or other species recommended by the NDOW and approved by the BLM. Habitat enhancement efforts may include pinion-juniper encroachment abatement, girdling trees for nesting habitat, reseeding or area burns, and completion of wildlife-specific projects, such as wildlife water sources. • Sumps would be constructed with a ramp for wildlife egress, bermed to prevent wildlife entry, and remain bermed until backfilled. Berms would be constructed to direct storm water away from the sump, and unmixed drilling fluids would not be left exposed to the environment after completion of the hole. Sumps would be liquid free within 30 days after the end of drilling. If the drilling fluids that remain in sumps pose a hazard to wildlife, Barrick would work with the BLM to reduce the wildlife hazard by either removing the fluid or backfilling the sump. • Consider seasonal distribution of large wildlife species when determining methods used to accomplish weed and insect control objectives. • BLM Ely District RMP Fish and Wildlife Resource BMP: o Active raptor nests in undisturbed areas within 0.25 mile of proposed disturbance would be protected by using species-specific protection measures.
Wildlife Resources	• Mule Deer Crucial Winter Range	• To offset the permanent loss of mule deer crucial winter range within the study area, BMM would restore and/or enhance important summer and/or winter mule deer range located on public land managed by the BLM or the State of Nevada within the vicinity of the Bald Mountain Mine at a ratio of 1:1. Acres identified for mitigation of sage grouse that overlap with mule deer crucial winter range acres would not be included in the determination of acres subject to restoration and/or enhancement. BMM would coordinate with NDOW or the BLM, depending on which agency manages the public land for the project(s) to identify appropriate areas for restoration and/or enhancement. • In lieu of or in combination with restoration projects, at BMM's choosing, BMM would provide monetary compensation for habitat enhancement purposes, up to $600/acre for permanent loss of mule deer crucial winter range within the study area. Crucial winter range are those areas defined in the 2016 FEIS as such. Compensatory

Table 2.4-54 Summary of Design Features and Applicant-committed Environmental Protection Measures

Critical Element/ Resource	Potential Concerns	Design Features and Applicant-committed Environmental Protection Measures
		mitigation in the form of monetary compensation would be applied as assistance to fund current and future authorized habitat enhancement activities such as the Overland Pass Habitat Enhancement Decision or the Huntington and Newark Watershed Restoration projects. In lieu of monetary compensation, BMM would also offer support of these projects and/or other enhancement projects as appropriate by offering aid such as equipment and manpower when available. BMM would project their permanent mine plan disturbance on an annual basis and provide these numbers to the NDOW in order to calculate the compensation for that year for the agreed-upon amount. • Restoration projects would be used to restore important seasonal mule deer habitat; examples of restoration activities are: o Seeding Treatments – Possible seeding treatments include broadcast and drag, drill, broadcast/aerial, harrow, disking, and hand. o Mechanical Treatment – To provide for an adequate seedbed, application of mechanical treatments as appropriate. o Herbicide Treatment – A combination of herbicide treatments would be used to suppress non-native annuals and crested wheatgrass in order to introduce shrubs, forbs and grasses into the treatment areas. o Prescribed Burn Treatments – Controlled burns would be used to reduce fuels, control competing vegetation, and improve wildlife and mule deer habitat. • Restoration projects would be based on the projected permanent mine disturbance on an annual basis and would occur within the mining period. Projects would be identified at least 2-months prior to initiating permanent disturbance in mule deer crucial winter habitat.

Table 2.4-54 Summary of Design Features and Applicant-committed Environmental Protection Measures

Critical Element/ Resource	Potential Concerns	Design Features and Applicant-committed Environmental Protection Measures
Special Status Species	• Herbicides application in areas of special status species • Sage-grouse leks • Utilities in sage grouse lek areas • Bald and golden eagles • Non-native invasive species control in special status species areas • Pygmy rabbits and pygmy rabbit habitat	• In order to prevent the illegal take or disturbance of bald or golden eagles, Barrick would utilize the following measures: o Develop a Bird and Bat Conservation Strategy; o Where possible, protect and preserve potential roost and nest sites by retaining mature trees, particularly within 0.5 mile from water; o Noxious weed and invasive species control would not be conducted within 0.5 mile of nests during the breeding season, and whenever possible, hand spraying herbicides would be the preferred method; o Where eagles are likely to nest in human-made structures, such as radio and cell phone towers, and such use could impede the operation and maintenance of the structures or jeopardize the safety of the eagles, the structures would be equipped with either devices engineered to discourage eagles from nest-building or would be constructed with nesting platforms that would safely accommodate eagle nests without interfering with structure performance; o Industry-accepted BMPs would be employed at new utility lines, new towers, and new poles to prevent eagles from colliding with or being electrocuted as outlined in the Bird and Bat Conservation Strategy; o Process areas would be designed to prevent contact between eagles and process solution by using bird balls on process ponds and placing overliner or other material over conveyance ditches; o Process ponds, storm water/event ponds, and other areas of cyanide use would be fenced with 8-foot-high wildlife exclusion fence in accordance with NDOW's Industrial Artificial Pond Permit; o Speed limits would be maintained to reduce vehicle/eagle collisions; and o During annual training, Barrick would remind employees of their individual and company-defined responsibilities toward protecting eagles. • When managing weeds in areas of special status species, the impacts of the treatment on such species would be carefully considered. Wherever possible, hand spraying of herbicides is preferred over other methods.

Table 2.4-54 Summary of Design Features and Applicant-committed Environmental Protection Measures

Critical Element/ Resource	Potential Concerns	Design Features and Applicant-committed Environmental Protection Measures
		• BLM Ely District RMP Special Status Species Resource BMP: o Avoid line of sight views between power line poles and sage-grouse leks whenever feasible.
Range Resources	• Loss of forage	• Reclamation activities would be conducted as soon as practicable.
Wild Horses	• Traffic around wild horses • Loss of forage	• The project would adhere to BLM BMPs for fencing specifications. • Reclamation activities would be conducted as soon as practicable. • BLM Ely District RMP Wild Horses Resource BMPs: o To protect wild horses and wildlife all new fences will be marked every 16 feet with durable material such as sage grouse diverters that are at least 1 inch wide and hang from the top wire of the fence. o Road signs for safety and protection of wild horses would be required if a project involves heavy or sustained traffic.
Paleontological Resources	• Impacts to paleontological resources of scientific interest	• If paleontological resources of potential scientific interest are encountered (including vertebrate fossils and deposits of petrified wood), resources would be left intact and immediately brought to the attention of the BLM Authorized Officer.
Cultural Resources	• Lack of cultural resource protection	• Cultural resources would be managed according to the terms and conditions of the Programmatic Agreement between the BLM and the Nevada State Historic Preservation Office (SHPO). A Class III cultural resources survey would be conducted in areas of proposed disturbance prior to initiation of construction and mining activities. • Avoidance is Barrick's preferred treatment for preventing adverse effects to historic properties (i.e., any prehistoric or historic site listed on or eligible for listing on the National Register of Historic Places [NRHP]). If avoidance is not possible and data recovery is proposed to minimize or mitigate project-related adverse effects. In the event of an unanticipated discovery, all activities would cease immediately within 100 meters of the discovery, and the BLM Authorized Officer notified of the discovery. • Inventory would be conducted by a permitted archaeologist. • Barrick would provide employee awareness training to ensure that all its personnel and all the personnel of its contractors and subcontractors are directed not to engage in the

Table 2.4-54 Summary of Design Features and Applicant-committed Environmental Protection Measures

Critical Element/ Resource	Potential Concerns	Design Features and Applicant-committed Environmental Protection Measures
		illegal collection of prehistoric and historic materials. • Barrick would perform viewshed reclamation when the setting of a site contributes to the significance of the property.
Air Quality	• Fugitive dust from roads and loading/dumping • Exhaust emissions • Fugitive dust during mining activities	• Air emissions, including point and fugitive sources, would be controlled in accordance with the air quality operating permits and current BMPs (e.g., dust control would be provided for haul roads through water or chemical application). • Point sources, such as carbon regeneration kilns, would be operated and maintained with appropriate controls as identified in air quality permits. • Point source controls at lime silos and carbon generation kilns (NOA only) would be operated and maintained in accordance with the air quality operating permit. Dust abatement techniques would be used on unpaved, unvegetated surfaces to minimize airborne dust. • Regular maintenance on equipment would be conducted to ensure proper function. • Speed limits would be posted and enforced to reduce airborne fugitive dust. • Dust abatement techniques would be used before and during surface clearing, excavation, or blasting activities. • BLM Ely District RMP Air Resource BMP: o Dust abatement techniques would be used before and during surface clearing, excavation, or blasting activities. o Construction materials and stockpiled soils would be covered if they are a source of fugitive dust.
Lands Use and Access	• Post-mining configuration of access roads • Public safety	• To the extent practicable, Barrick would protect survey monuments, witness corners, reference monuments, bearing trees, and line trees against unnecessary or undue destruction, obliteration, or damage. Public land survey system monuments would be protected and preserved in accordance with Nevada BLM IM No. NV-2007-003. If, in the course of operations, monuments, corners, or accessories are destroyed, Barrick would report the matter to the BLM Authorized Officer in a timely manner. • Barrick would comply with applicable federal and state fire laws and regulations and

Table 2.4-54 Summary of Design Features and Applicant-committed Environmental Protection Measures

Critical Element/ Resource	Potential Concerns	Design Features and Applicant-committed Environmental Protection Measures
		would take reasonable measures to prevent and suppress fires within project areas. • Post-mining safety barriers (e.g., berms, fencing, or other appropriate barriers) would be located based on the predicted slope stability at the time of closure. • Barrick would establish post-mining access in conjunction with BLM's Travel Management Plan. • Traffic control measures would be used during operations. • Access roads requiring construction would be designed with cut and fill to minimize surface disturbance and take into account the character of the landform, natural contours, cut material, depth of cut, where the fill material would be deposited, resource concerns, and visual contrast. Construction of access roads would be avoided on steep hillsides and near watercourses where alternative routes provide adequate access. • Where adverse impacts or safety considerations warrant, public access would be limited or prohibited when authorizing specific routes to areas or sites under permit or lease. • Access roads would be constructed to BLM road standards.
Recreation	• Recreation use • Public safety	• Reclamation would be conducted as soon as practicable. • Public access would be locally restricted during mining activities.
Visual Resources	• Light pollution • Viewshed protection	• During operations, the margins of the RDAs would be constructed to provide for variable topography during final regrading, thereby providing a more natural post-mining landscape. • Following the completion of mining, structures and buildings would be removed as necessary to achieve post-mining land use goals. • Concurrent reclamation would be implemented to the extent possible. Reclamation would be conducted as soon as practicable. • At industrial facilities authorized by the BLM Egan Field Office, anti-glare light fixtures would be used to limit light pollution. • During the implementation of vegetation treatments, irregular margins around the treatment areas would be created to better maintain the existing scenic character of the landscape.

Table 2.4-54 Summary of Design Features and Applicant-committed Environmental Protection Measures

Critical Element/ Resource	Potential Concerns	Design Features and Applicant-committed Environmental Protection Measures
Hazardous Materials and Solid Wastes	• Disposal of toxic and hazardous materials and solid wastes • Herbicide application • Accidental spills of hydrocarbons that could contaminate water, soil, and vegetation • Storage of hazardous materials • Handling of hazardous and solid wastes • Transporting hazardous materials	• Construction, operation, and maintenance activities would comply with applicable federal, state, and local laws and regulations regarding the use of hazardous substances and the protection of air and water quality. Hazardous materials storage, transportation and disposal would be managed in accordance with regulations required by RCRA, NDEP and NDOT. Temporary on-site hazardous waste storage areas would be operated and maintained for hazardous waste generated in accordance with all state and federal regulations. Hazardous materials would be manifested as required for transfers to off-site certified treatment, storage, and disposal facilities. • Aerosol cans would be emptied and de-pressurized prior to disposal. The punctured aerosol cans are recycled. Liquid drained from aerosol cans would be managed as hazardous waste, and accumulation of pressurized cans would be minimized. • Site wastes that are potentially hazardous would be tested to determine RCRA status and managed in accordance with applicable regulations. Hazardous waste storage areas would be inspected and maintained in accordance with RCRA generator status. • Trash, garbage, debris, and foreign matter would be removed and properly disposed of. The disposal site would be maintained and left in a clean and safe condition. Unless approved by the BLM/NDEP, burning would be prohibited on-site. • Prior to commencing herbicide control programs, and on a daily basis for the duration of the project, the certified applicator would provide a suitable safety briefing to personnel working with or in the vicinity of the herbicide application. This briefing would include safe handling, spill prevention, cleanup, and first aid procedures. • Consider nozzle type, nozzle size, boom pressure, and adjuvant use and take appropriate measures for each herbicide application project to reduce the chance of chemical drift. • All applications of approved pesticides would be conducted only by certified pesticide applicators or by personnel under the direct supervision of a certified applicator. • Barrick would work with the BLM Authorized Officer on the containment of drilling fluids and drill hole cuttings. Adequately fence, post, or cover mud and separation pits, and hazardous material storage areas. • Powder magazines would be located at least 0.25 mile from traveled roads, and

Table 2.4-54 Summary of Design Features and Applicant-committed Environmental Protection Measures

Critical Element/ Resource	Potential Concerns	Design Features and Applicant-committed Environmental Protection Measures
		explosives would be used according to applicable federal and state regulations. Loaded shot holes and charges would be attended at all times. • Store and transport petroleum products such as gasoline, diesel fuel, and lubricants in approved containers. • Properly store hazardous materials in separate containers to prevent mixing, drainage, or accidents. • Follow Barrick and contractor standard operating procedures for handling hazardous and solid waste. • Operate and close landfill in accordance with NDEP regulatory requirements. • Clean up spills in accordance with NDEP guidelines. • BLM Ely District RMP Health and Safety Resource BMPs: o All tailings, dumps, and deleterious materials or substances would be properly disposed. Measures would be taken to isolate, control, and properly dispose of toxic and hazardous materials. o Do not drain oil or lubricants onto the ground surface. Immediately clean up spills less than 25 gallons; clean up spills over 25 gallons as soon as possible and report the incident to the BLM Authorized Officer and NDEP.

Source: Barrick 2012a,b.

2.4.3.1 Mule Deer Design Features

In addition to the design features summarized in **Table 2.4-54**, the following design features specific to mule deer would be considered standard operating procedures for both the proposed NOA and SOA projects, unless otherwise noted. These design features have been developed site-specifically by the BLM and NDOW. Barrick would coordinate with BLM and NDOW as necessary to ensure the effective implementation of these design features.

Road Berms

- Haul road berm cuts would be maximized within designated mule deer migration corridors, so as to meet MSHA requirements and maximize the options for mule deer passage. Haul road berm cut widths would be maximized, to the extent possible.
- Within designated mule deer migration corridors, and as natural topography allows, haul road berm cuts would be designed and constructed at a minimum of a 4H:1V slope while meeting MSHA requirements, so as not to create a structure that is impassable to wildlife. Where practicable, haul road berm cuts would be designed and constructed at a 5H:1V slope to further facilitate mule deer migration.
- The use of natural topography as an effective berm would be utilized as to meet MSHA requirements and maximize mule deer movement. Where practicable, depressions or ravines adjacent to haul road berms would be filled in order to mediate steep approaches that may be impassable to wildlife.
- GMSs or road material would not be placed along existing haul road berms or haul road berm cuts within designated mule deer migration corridors.
- Haul road berm cuts would be “matched” on each side of the road, so as to meet MSHA requirements, and to facilitate effective mule deer movement in a linear fashion within designated mule deer migration corridors.
- In the planned sequence of the mining operations, as soon as ore and waste haulage cease, haul road berms within or adjacent to designated mule deer migration corridors would be reduced in size to meet MSHA requirements.
- Within haul road berm cuts and designated mule deer migration corridors, substrate would be no greater than 2 inches in diameter where practicable, so mule deer can easily walk through the area (i.e., no boulders or large cobble would be present).

Fencing

- Fences would be minimized to the extent possible.
- Where fences are necessary to exclude the public, cattle, or wild horses, a 3-strand smooth-wire style fencing material would be utilized on all fences with the following specifications:
  - Top wire: 38 inches high (top wire to ground surface)
  - Middle wire: 28 to 30 inches from ground surface (maintain at least 12 inches between top and bottom wires)
  - Bottom wire: 18 inches from the ground surface
  - Fence posts would be placed 16 feet on center
- Alternatively, a two-rail pipe-rail fence could be installed.

Rock Disposal Areas

- During reclamation, RDAs within designated mule deer migration corridors would be recontoured to a 3H:1V slope or shallower.
- RDAs within designated mule deer migration corridors would be developed using landform design type software.
- All RDAs would be designed to incorporate undulations into top and side slopes. Growth media would be distributed at variable depths where feasible in order to promote wildlife habitat diversity while meeting the minimum 6-inch required depth.
- In areas where RDAs abut designated mule deer migration corridors, the adjacent RDA edges would be reclaimed concurrently with RDA construction in order to maximize the vegetated and contoured portion of the RDA and in effect widen the corridor available to mule deer.
- The first lifts of all RDAs within designated mule deer migration corridors would be recontoured to a 3H:1V slope or shallower, and be covered with growth media as soon as construction of the first lift is completed.
- The portion of the East Sage RDA within the designated mule deer migration corridor near the Poker Flats Pit would be recontoured to a 3H:1V slope or shallower and covered with growth media to facilitate north-south movement of mule deer (**Figures 2.5-1** and **2.5-3**).
- During reclamation, two lifts (approximately 300 feet) of the East Sage RDA would be recontoured at 3H:1V slope or shallower on both north and south aspects that comprises a length of approximately 1,750 feet. The north and south aspects of the East Sage RDA consist of an area that is near the haul road and beginning a few hundred feet southwest of western edge of the designated Poker Flats Mule Deer Corridor (**Figures 2.5-1** and **2.5-3**). As a result, in this area, the East Sage RDA will not be built out to its authorized footprint resulting in a reduction of approximately 50 acres.

Exploration Drilling Timing Restrictions

- Exploration activities would be limited within designated mule deer migration corridors during the migration season, specifically between November 30 to January 5 and March 15 to April 30. Based on the time of year, mule deer collar movement data, and/or the type of activity, exploration activities may be authorized within designated mule deer migration corridors only when determined appropriate by the authorized officer and in coordination with NDOW. Following an email approval, a Notice to Proceed also may be issued by the BLM to document the approval of exploration within designated mule deer migration corridors.

Reclamation

- The BLM and NDOW would collectively develop reclamation protocol and performance criteria for designated mule deer migration corridors. Planting of shrub seedlings would be utilized as appropriate in mule deer migration corridors to expedite plant establishment and to promote security cover. Shrub seedling success would be monitored annually to allow for adaptive management.
- Any disturbance within designated mule deer migration corridors, including interpit areas and roads, would be reclaimed as soon as the activity is complete and/or the need is met as described in the PoO.
- The use of pinyon-juniper skeletons would be evaluated within each designated mule deer migration corridor in order to provide an immediate form of security cover.
- GMSs remaining in place throughout a growing season would be seeded with an interim seed mix.

General

- Temporary facilities, such as trailers, light plants, and parked equipment would not be located within designated mule deer migration corridors during the active migration periods, between November 30 to January 5 and March 15 to April 30.
- Whenever possible, reclamation of existing disturbances would be completed before new adjacent disturbance activities are initiated.
- Mining reclamation projects within designated mule deer migration corridors and adjacent habitats would be prioritized over other reclamation activities.

2.4.4 Reclamation

Reclamation and closure of disturbed areas resulting from the proposed project would be completed in accordance with BLM and NDEP regulations. Reclamation activities are designed to meet the BLM regulations contained in 43 CFR 3809; State of Nevada BMRR requirements per the authority of the NRS 519A.010-519A.290 and the NAC 519A.010-519A.415; and achieve post-mining land uses consistent with the Ely District ROD and Approved RMP (BLM 2008b). Upon completion of operations, final closure and reclamation of proposed facilities would be completed pursuant to the final closure plan and schedule that would be submitted to the BLM and NDEP for approval. The detailed closure plan for each facility would be prepared at least 2 years prior to the anticipated closure date and would conform with the WPCP regulations at the time of closure. Barrick would conform to the NDEP mine closure process requirements, which currently include the following closure plan submittals for agency approval (NDEP 2010):

1. Tentative Permanent Closure Plan – Submitted at the time of application for a WPCP (NAC 445A.398);
2. Final Permanent Closure Plan – Submitted at least 2 years prior to the “anticipated permanent closure of that process component” (NAC 445A.447);
3. Final Closure Report – (a) summarizes all completed closure-related activities (i.e., draindown and long-term drain down managementof the heap; monitoring; facility characterization; leachfield construction; completed earthwork); (b) provides closure related as-builts, if required; and (c) proposes post-closure monitoring, as applicable; and
4. Request for Final Closure – Demonstrates that facility stabilization (both chemical and physical) has been achieved and solicits WPCP retirement.

2.4.4.1 Post-mining Land Use and Reclamation Goals

Reclamation for the proposed project is designed to return disturbed land to a level of productivity comparable to pre-mining levels associated with adjacent land including mineral exploration and development, mining, livestock grazing, wildlife habitat, wild horse habitat, and dispersed recreation.

The objectives for the closure and reclamation plan for the proposed project include:

- Provide a stable post-mining landform that: 1) supports defined land uses, such as wildlife habitat and domestic grazing; and 2) blends existing topography with final slopes not to exceed an angle of 2.5H:1V or 3H:1V or shallower;
- Establish erosional stability and protect water resources through control of water runoff, stabilization of components, prevention of adverse fluid drainage, and reduction in infiltration of water in components;
- Establish post-reclamation surface soil conditions conducive to the regeneration of a stable, diverse, noxious weed-free plant community compatible with land use goals;

- Maintain public safety by stabilizing or limiting access to landforms that could constitute a public hazard; and
- Minimize impacts to visual resources through concurrent reclamation, to the extent possible.

2.4.4.2 Concurrent Reclamation and Conceptual Reclamation Schedule

A Reclamation Plan was developed for the proposed projects and submitted to the BLM (Barrick 2012a,b). The estimated time to achieve successful reclamation assumes that average precipitation occurs during the year following reseeding. Periods of drought could delay revegetation, while excessive precipitation could increase HLF inventory evaporation times. Generally, the time to complete reclamation and closure activities is staged to allow completion within a single calendar year, although neither planning nor reclamation cost estimation is critically dependent on whether the reclamation is completed within a single year.

Reclamation would occur concurrently with mining operations as areas become available and when reclamation could be completed in a safe and effective manner. Concurrent reclamation would include recontouring and revegetating completed sections of the RDAs incrementally during the operating period. Exploration and access roads would be recontoured and revegetated when no longer needed; some access roads would be retained and maintained to provide access for monitoring.

The revegetation standards as outlined in the Nevada Guidelines for Successful Revegetation for the Nevada Division of Environmental Protections, The Bureau of Land Management, and the USDA Forest Service would be met and filing and maintenance of acceptable surety as specified in NAC 519A.350 to ensure reclamation would be completed. Reclaimed acreage would be reported to the BLM and the NDEP on a regular basis. Barrick would coordinate concurrent reclamation and associated surety releases with the BLM and NDEP, as appropriate.

Final reclamation would be completed during the period following operation as described for the proposed NOA and SOA projects in the following sections. Post-closure monitoring by the NDEP could continue up to 30 years following completion of processing based on current regulations. The duration of the BLM's post-closure monitoring would depend on the project's final closure plan and its implementation.

The proposed NOA project would be active for approximately 20 years with processing at the HLFs continuing for up to an additional 3 years. Concurrent reclamation and closure would occur during active construction and operations. Final reclamation and closure would occur from years 21 through 46. **Table 2.4-55** illustrates a conceptual schedule for reclamation, closure, and post-closure monitoring activities for the proposed NOA project. **Appendix B** provides a detailed conceptual schedule illustration for reclamation, closure, and post-closure monitoring activities for the proposed NOA project.

The proposed SOA project would be active for approximately 19 years with processing at the HLFs continuing for up to an additional 3 years. Concurrent reclamation and closure would occur during active construction and operations. Final reclamation and closure would occur from years 21 through 46. **Table 2.4-56** illustrates a conceptual schedule for reclamation, closure, and post-closure monitoring activities for the proposed SOA project. **Appendix B** provides a detailed conceptual schedule illustration for reclamation, closure, and post-closure monitoring activities for the proposed SOA project.

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Table 2.4-55 Proposed Action – Conceptual Reclamation Schedule for the North Operations Area

Component	Year																																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33 to 46	47 to 50	51 to 75
Reclamation																																			
Open Pit Closure																																			
Pit Safety Berm Reclamation																																			
Rock Disposal Area Reclamation																																			
Heap Leach Facility Earthwork																																			
Process Ponds Reclamation																																			
Haul Roads, Access Roads, Ancillary Facilities (Non-structure related) Reclamation																																			
Structure Demolition and Reclamation																																			
Processing Facility Site Reclamation																																			
Well Abandonment																																			
Exploration																																			
Closure																																			
Interim Fluid Management																																			
Fluid Inventory Reduction - Recirculation and Active Evaporation																																			
Fluid Inventory Reduction - ET Cells																																			
Monitoring																																			
Reclamation Monitoring																																			
Post-closure Monitoring[1]																																			

[1] This schedule is conceptual and subject to changes due to mining sequences that may affect the overall plan. Minimum of 50 years and maximum of 75 years.

Source: Barrick 2012a.

Table 2.4-56 Proposed Action – Conceptual Reclamation Schedule for the South Operations Area

Component	Year																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30 to 45	46 to 49	50 to 80
Reclamation																																
Open Pit Reclamation				■						■											■											
Pit Safety Berm Reclamation										■											■											
Rock Disposal Area Reclamation				■			■			■											■	■										
Heap Leach Facility Earthwork																■											■					
Process Ponds Reclamation																■											■					
Haul Roads, Access Roads, Ancillary Facilities (Non-structure related) Reclamation																	■											■				
Structure Demolition and Reclamation																■											■					
Processing Facility Site Reclamation																■											■					
Well Abandonment																		■											■			
Exploration										■	■										■	■										
Closure																																
Interim Fluid Management													■											■								
Fluid Inventory Reduction - Recirculation and Active Evaporation														■	■										■	■						
Fluid Inventory Reduction - ET Cells															■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
Monitoring																																
Reclamation Monitoring					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Post-closure Monitoring														■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

[1] This schedule is conceptual and subject to changes due to mining sequences that may affect the overall plan.

Source: Barrick 2012a.

2.4.4.3 Post-mining Contours, Topography, and Regrading

Final grading proposed for the project facilities would provide stability and minimize the visual impact of unnatural lines and landforms. Slopes would be regraded to blend with surrounding topography, interrupt straight-line features, and facilitate revegetation, where practical. Large constructed topographic features, such as RDAs and HLFs, would have rounded crests and variable slope angles to resemble natural landforms, to the extent possible. Topographic forms would be developed to manage surface water and moisture appropriately over the long term. Designs to prevent ponding and snow accumulation would be implemented on facilities where prevention of water infiltration is important.

RDAs and HLFs would be regraded to slope angles ranging from to 2.5H:1V or 3H:1V or shallower. The open pits would remain as large depressions with safety berms to preclude vehicular access to the pits. Over time, the bench slopes naturally degrade as the wall rock weathers and erodes resulting in a gradual flattening of overall bench slope angle. Pit backfill areas that extend beyond the surface of open pits would be reclaimed. The preliminary design contours of the reclaimed mine facilities for the proposed NOA and SOA projects are illustrated in **Figures 2.4-10** and **2.4-11**, respectively. Additional detail on the post-mining contours and topography for individual facilities are discussed in Section 2.4.4.6, Proposed Facility Reclamation.

2.4.4.4 Growth Media and Erosional Stability

Growth Media

Growth media would be salvaged from mine components prior to construction for use as cover material during reclamation. Areas affected by proposed activities, except areas limited by topography or areas previously disturbed and reclaimed, are anticipated to have available growth media removed and placed in designated GMSs. The stockpiles would be located near the components for which the material would be used and in such a manner as to reduce degradation of the material by wind and water erosion and reduce reclamation costs associated with reuse. Stockpiles that would remain in place throughout the growing season would be seeded with an interim seed mixture as shown in **Table 2.4-57** to stabilize the material and minimize noxious weed introduction.

Table 2.4-57 Interim Seed Mixture for Growth Media Stockpiles

Species	Common Name	Pure Live Seed (lb/acre)
Agropyron smithii	Western wheatgrass	3.0
Elymus trachycaulus	Slender wheatgrass	1.0
Elymus lanceolatus	Thickspike wheatgrass	5.0
Onobrychis viciifolia	Remont sainfoin	1.0
Total		**10.0**

Source: Barrick 2012a,b; USDA 2010.

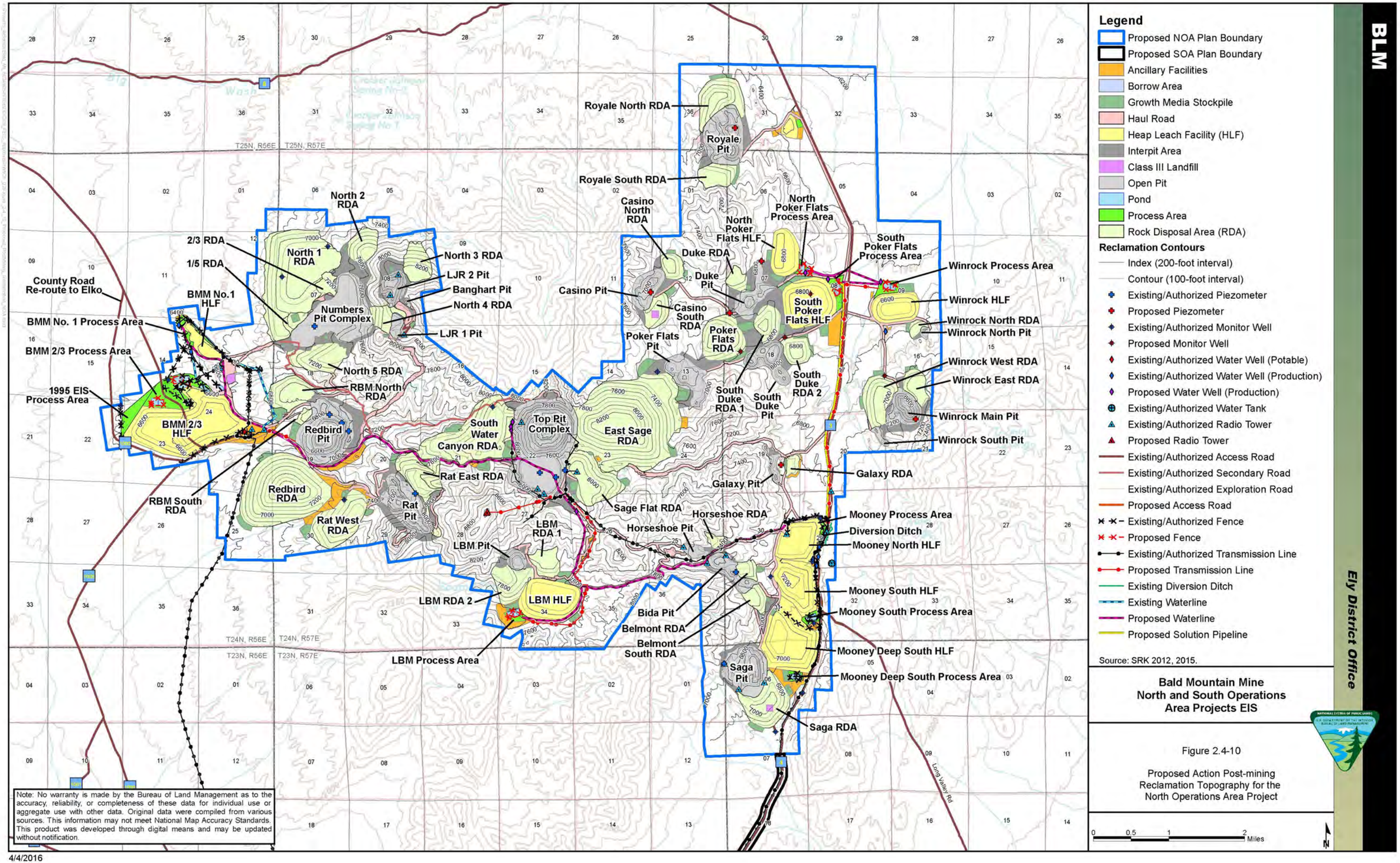
Proposed North Operations Area Project

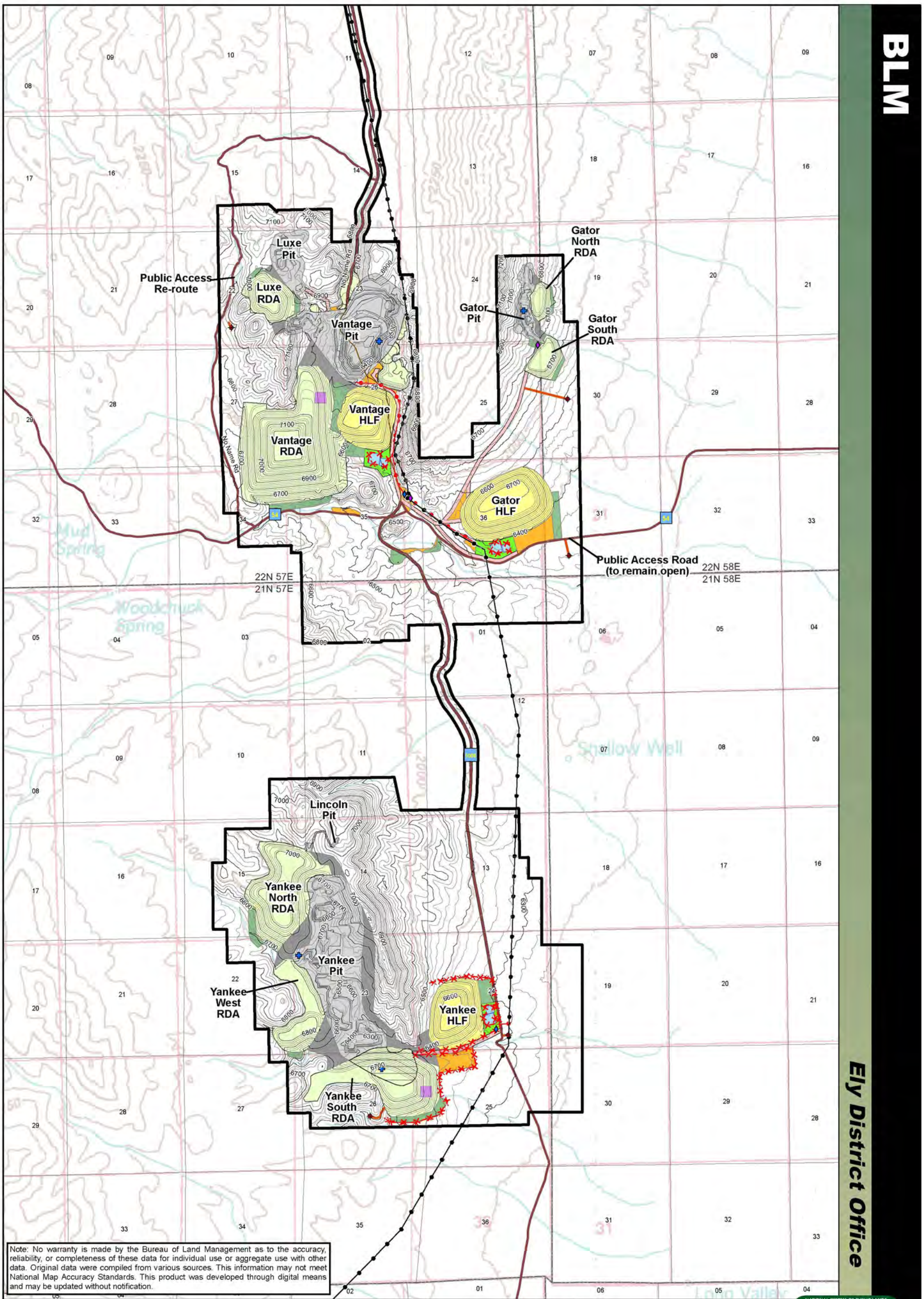
Barrick would recover suitable growth media for use in reclamation. Based on soil unit classifications by the Natural Resources Conservation Service (NRCS), and the reported minimum and maximum depths for each soil unit, between 3.5 million cubic yards and 6.7 million cubic yards of growth media is estimated to be available for salvage within the proposed NOA. The steep terrain and limited thickness of non-rock material could result in insufficient growth media available for salvage. The placement of growth media would be prioritized during reclamation to ensure critical reclamation areas (i.e., HLFs) are

provided sufficient growth media cover to meet closure requirements. An estimated 3.9 million cubic yards of growth media is required for reclamation of RDAs, process areas, and HLFs within the proposed NOA. Additionally, if needed, an alluvium organic mixture would be utilized as growth media as well. The depth of growth media placed on disturbed areas may vary, but would meet the revegetation standards provided in the Nevada Guidelines for Successful Revegetation. Although the depth of growth media placed on disturbed areas may vary, it will be sufficient to meet the revegetation standards provided in the *Nevada Guidelines for Successful Revegetation*. Proposed RDAs would be covered with approximately 6 inches of growth media based on cover modeling results and performance of existing RDAs at Bald Mountain. Hydrus 1-D modeling was used to predict hydrologic behavior and performance of covers at 6-inch and 12-inch depths and varying soil textures for 12-inch, 16-inch, and 20-inch precipitation zones (representing low, intermediate, and high elevation sites) were modeled (Schafer 2012a,b). The modeling results showed that the thickness of the applied cover soil layer (6 versus 12 inches) was less important than the characteristics of the waste rock underlying the cover-soil. With either 6- or 12-inch soil layers, the deep drainage was less than 1 percent of rainfall when the waste rock had an appreciable water holding capacity (as is the expected condition based on textural measurements at Bald Mountain). Based on the predicted water movement, use of 6 inches of soil cover is expected to minimize deep drainage at Bald Mountain for all RDAs but the highest elevation sites where rainfall exceeds 16 inches (Schafer 2012a,b). For waste rock placed at higher elevations, infiltration through the soil covers of 10 to 15 percent of rainfall (Schafer 2012a,b) is not expected to have an adverse effect on waters of the State owing to the minimal reactivity of waste rock and due to low metal mobility. Historically, Bald Mountain has used a 6-inch soil cover to reclaim rock dumps. Performance of existing RDAs at Bald Mountain support the predictive Hydrus 1-D modeling results. Analyses from sonic drilling results of 9 legacy RDAs found no evidence that seepage has transported soluble constituents, metals or acidity from the existing RDA's (see Section 3.3, Water Quantity and Quality).

Proposed HLFs would be covered with 18 to 24 inches of growth media. All other mine components would have a minimum 6-inch growth media unless otherwise specified by the BLM or the NDEP. In the event cover material salvage exceeds the planned stockpile capacities, growth media would be stockpiled on the tops of RDAs and within interpit areas. Additionally, growth media would be stockpiled within the boundaries of the proposed RDAs in a manner that would ensure future access to the stockpiled growth media.

Figures 2.4-1 and **2.4-2** illustrate the proposed GMSs for the proposed NOA project. **Table 2.4-58** provides the estimated capacity of growth media per mine component within the proposed NOA project.


Legend
Proposed NOA Plan Boundary
Proposed SOA Plan Boundary
Ancillary Facilities
Borrow Area
Growth Media Stockpile
Haul Road
Heap Leach Facility (HLF)
Interpit Area
Class III Landfill
Open Pit
Pond
Process Area
Rock Disposal Area (RDA)
Reclamation Contours
Index (200-foot interval)
Contour (100-foot interval)
Existing/Authorized Piezometer
Proposed Piezometer
Existing/Authorized Monitor Well
Proposed Monitor Well
Existing/Authorized Water Well (Potable)
Existing/Authorized Water Well (Production)
Proposed Water Well (Production)
Existing/Authorized Water Tank
Existing/Authorized Radio Tower
Proposed Radio Tower
Existing/Authorized Access Road
Existing/Authorized Secondary Road
Existing/Authorized Exploration Road
Proposed Access Road
Existing/Authorized Fence
Proposed Fence
Existing/Authorized Transmission Line
Proposed Transmission Line
Existing Diversion Ditch
Existing Waterline
Proposed Waterline
Proposed Solution Pipeline
Source: SRK 2012, 2015.
Bald Mountain Mine
North and South Operations
Area Projects EIS
Figure 2.4-10
Proposed Action Post-mining Reclamation Topography for the North Operations Area Project
0 0.5 1 2 Miles
N
BLM
Ely District Office
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.
Royale North RDA
Royale Pit
Royale South RDA
Casino North RDA
North Poker Flats HLF
North Poker Flats Process Area
South Poker Flats Process Area
Duke RDA
Duke Pit
Casino Pit
Casino South RDA
South Poker Flats HLF
Winrock Process Area
Winrock HLF
Winrock North RDA
Winrock North Pit
Poker Flats Pit
Poker Flats RDA
South Duke RDA 1
South Duke Pit
South Duke RDA 2
Winrock West RDA
Winrock East RDA
Winrock Main Pit
Winrock South Pit
North 2 RDA
North 1 RDA
2/3 RDA
1/5 RDA
North 3 RDA
LJR 2 Pit
Banghart Pit
North 4 RDA
LJR 1 Pit
Numbers Pit Complex
County Road Re-route to Elko
BMM No.1 HLF
BMM No. 1 Process Area
BMM 2/3 Process Area
1995 EIS Process Area
BMM 2/3 HLF
North 5 RDA
RBM North RDA
Redbird Pit
South Water Canyon RDA
Top Pit Complex
East Sage RDA
Rat East RDA
Redbird RDA
Rat West RDA
Rat Pit
RBM South RDA
Galaxy Pit
Galaxy RDA
Sage Flat RDA
Horseshoe RDA
Horseshoe Pit
LBM RDA 1
LBM Pit
Mooney Process Area
Diversion Ditch
Mooney North HLF
Mooney South HLF
Mooney South Process Area
LBM RDA 2
LBM HLF
Bida Pit
Belmont RDA
Belmont South RDA
LBM Process Area
Mooney Deep South HLF
Saga Pit
Mooney Deep South Process Area
Saga RDA
T25N, R56E
T25N, R57E
T24N, R56E
T24N, R57E
T23N, R56E
T23N, R57E
Long Valley Rd



Legend

- Proposed SOA Plan Boundary
- Ancillary Facilities
- Growth Media Stockpile
- Haul Road
- Heap Leach Facility (HLF)
- Interpit Area
- Class III Landfill
- Open Pit
- Pond
- Process Area
- Rock Disposal Area (RDA)
- Pit and RDA

Reclamation Contours

- Index (100-foot interval)
- Contour (25-foot interval)
- Existing/Authorized Piezometer
- Proposed Monitor Well
- Existing/Authorized Water Well (Production)
- Proposed Water Well (Production)
- Existing/Authorized Access Road
- Existing/Authorized Exploration Road
- Proposed Access Road
- Proposed Fence
- Existing/Authorized Transmission Line
- Proposed Transmission Line

Source: SRK 2012, 2015.

2/10/2016

Bald Mountain Mine North and South Operations Area Projects EIS

Figure 2.4-11

Proposed Action Post-mining Reclamation Topography for the South Operations Area Project

0 0.25 0.5 1 Miles

Table 2.4-58 North Operations Area Project Growth Media Stockpile Capacities

Growth Material Stockpile Location[1]	Estimated Capacity (cubic yards)
Redbird Pit	635,000
Redbird RDA – North	360,000
Redbird RDA – South	510,000
Rat West RDA – West	650,000
East Sage RDA – Northeast	765,000
East Sage RDA – Southeast	450,000
Sage Flat RDA – Northwest	315,000
Sage Flat RDA – West	115,000
Belmont South RDA	50,000
LBM RDA 1	305,000
LBM RDA 2	405,000
LBM HLF – East	235,000
LBM HLF – North	170,000
Royale North RDA	370,000
Royale South RDA	235,000
Casino North RDA – North	120,000
Casino North RDA – Southeast	120,000
Casino South RDA	325,000
Duke RDA	130,000
North Poker Flats HLF – West	235,000
North Poker Flats HLF – South	310,000
North Poker Flats Process	25,000
South Poker Flats HLF – North	500,000
South Poker Flats HLF – South	620,000
Poker Flats RDA – South	370,000
Poker Flats RDA – East	650,000
South Duke RDA 1 – Southeast	195,000
South Duke RDA 2 – North	105,000
South Duke RDA 2 – East	75,000
Winrock HLF	675,000
Winrock North RDA	115,000
Winrock East RDA	165,000
Winrock West RDA – North	180,000
Winrock West RDA – West	150,000
Total	**10,635,000**

[1] Includes the proposed changes to authorized GMSs or proposed new GMSs. Does not include existing/authorized GMSs.

Source: Barrick 2012a.

Proposed South Operations Area Project

Barrick would recover suitable growth media for use in reclamation. Based on soil unit classifications by the NRCS, and the reported minimum and maximum depths for each soil unit, between 1.9 million cubic yards and 3.7 million cubic yards of growth media is estimated to be available for salvage within the proposed SOA. The steep terrain and limited thickness of non-rock material could result in insufficient growth media available for salvage. The placement of growth media would be prioritized during reclamation to ensure critical reclamation areas (i.e., HLFs) are provided sufficient growth media cover to meet closure requirements. An estimated 3.0 million cubic yards of growth media would be required for reclamation of RDAs, process areas, and HLFs within the proposed SOA. If needed, an alluvium organic mixture would be utilized as growth media as well. The depth of growth media placed on disturbed areas may vary but would be sufficient to meet the revegetation standards provided in the Nevada Guidelines for Successful Revegetation.

Proposed RDAs would be covered with a minimum of 6 inches of growth media. The Gator Pit RDAs would be covered with 6 to 12 inches of growth media. Proposed HLFs would be covered with 18 to 24 inches of growth media. All other mine components would have a minimum 6-inch growth media unless otherwise specified by the BLM or the NDEP. In the event cover material salvage exceeds the planned stockpile capacities, growth media would be stockpiled on the tops of RDAs and within interpit areas. Additionally, growth media would be stockpiled within the boundaries of the proposed RDAs in a manner that would ensure future access to the stockpiled growth media.

Figures 2.4-3 and **2.4-4** illustrate the proposed GMSs for the proposed SOA project. **Table 2.4-59** provides the estimated capacity of growth media per mine component within the proposed SOA project.

Table 2.4-59 South Operations Area Project Growth Media Stockpile Capacities

Growth Media Stockpile Location	Estimated Capacity (cubic yards)
Gator North RDA	62,000
Gator South RDA	90,000
Gator Pit	47,000
Gator HLF	675,000
Vantage RDA – South	810,000
Vantage HLF	455,000
Between Vantage RDA and Vantage HLFs	930,000
Luxe RDA – North	88,000
Luxe RDA – South	135,000
Yankee HLF	738,000
Yankee South RDA	686,000
Yankee West RDA	140,000
Yankee North RDA	581,000
Total	**5,437,000**

Source: Barrick 2012b.

Erosional Stability

As previously stated, growth media material for the proposed project has been characterized using NRCS soil survey data. This information was used to determine potential soil loss using the Revised Uniform Soil Loss Equation (RUSLE). Results of the RUSLE analyses are included within the PoO (NOA PoO, Appendix O and SOA PoO, Appendix N) (Barrick 2012a,b). The outputs generated by the RUSLE program provide a planning tool for limiting soil erosion during the reclamation stages. As such, active erosion control measures would be applied during reclamation activities to reduce sediment migration from the reclaimed facilities until vegetation can be established. Barrick would maintain erosion control measures at the base of reclaimed facilities and, where applicable, diversions at the head of those reclaimed slopes having excessive erosion until vegetation has established. Head-relief benches (depressions) would be placed at regular intervals to further reduce soil migration.

2.4.4.5 Surface Preparation, Revegetation, and Weed Control

Revegetation of disturbed areas would be conducted as soon as practical following regrading and growth media placement in order to control runoff, reduce erosion, provided forage for wildlife and livestock, and reduce visual impacts.

Seed bed preparation would be performed immediately prior to seeding to allow seed placement prior to soil recompaction. Prior to seeding, the growth media material would be ripped or scarified as required to promote water retention, reduce erosion, and prepare the final seed bed. Seeding would be conducted by a number of methods including rangeland drill, hydroseeder, or mechanical broadcast and harrow, depending upon accessibility. Seedbed preparation and seeding would typically take place between the BLM-recommended dates of October 1 and March 15 of each year after grading and growth media material placement activities are complete. Seeding outside these dates may occur, depending upon weather conditions.

Two reclamation seed mixtures and application rates have been approved by the BLM for both the proposed NOA and SOA projects (**Tables 2.4-60** and **2.4-61**). One seed mixture would be for elevations above 7,000 feet (**Table 2.4-60**) and the other seed mixture is for elevations below 7,000 feet (**Table 2.4-61**). The plant species in these seed mixtures have the ability to grow within the constraints of the low annual precipitation experienced in the region and are suitable for the site elevation, soil types, and aspects. The plants also would provide erosion protection, forage for animals and cover characteristics similar to the pre-disturbance conditions. The seed mixtures support the anticipated post-mining land uses.

Table 2.4-60 Recommended Seed Mixture Above 7,000 feet

Scientific Name	Common Name	Pure Live Seed (lb/acre)
Shrub Species		
Artemisia tridentata ssp. *vaseyana*	Mountain big sagebrush	0.2
Artemisia tridentata ssp. *tridentata*	Big basin sagebrush	0.2
Purshia tridentata	Antelope bitterbrush	0.5
Symphoricarpos albus	Snowberry	0.25
Amelanchier arborea	Serviceberry	0.25

Table 2.4-60 Recommended Seed Mixture Above 7,000 feet

Scientific Name	Common Name	Pure Live Seed (lb/acre)
Grass Species		
Pseudoroegneria spicata spp. *spicata*	Bluebunch wheatgrass	2.0
Elymus trachycaulus spp.	Slender wheatgrass	1.0
Elymus lanceolatus ssp. *lanceolatus*	Thickspike wheatgrass	1.0
Poa canbyi	Canby's bluegrass	0.1
Leymus cinereus	Great Basin wildrye	1.0
Achnatherum hymenoides	Indian ricegrass	0.5
Elymus elymoides	Bottlebrush squirreltail	0.5
Forb Species		
Linum lewisii	Appar blue (Lewis') flax	0.1
Balsamorhiza sagittata	Arrowleaf balsamroot	0.5
Penstemon palmeri	Palmer's penstemon	0.1
Crepis sp.	Hawksbeard	0.1
Achillea millefolium var. *occidentalis*	Western yarrow	0.5
Sphaeralcea coccinea ssp. *Elata*	Scarlet globemallow	2.0
Calochorus nuttallii	Sego lily	0.1
Mertensia sp.	Bluebells	0.1
Astragalus sp.	Milkvetch	0.1
Nothocalais troximoides	Sagebrush false dandelion	0.1
Eriogonum umbellatum	Sulphur flower buckwheat	0.1
Total		**11.3**

Note: The above is a list of BLM-approved reclamation species; the actual seed mixture would vary from one area to another. The BLM, NDOW, and Barrick would decide upon the actual seed mix before seeding of a particular area.

Source: Barrick 2012a,b; USDA No Date.

Table 2.4-61 Recommended Seed Mixture Below 7,000 feet

Scientific Name	Common Name	Pure Live Seed (lb/acre)
Shrub Species		
Artemisia tridentata ssp. *vaseyana*	Mountain big sagebrush	0.2
Artemisia tridentata ssp. *tridentata*	Big basin sagebrush	0.2
Purshia tridentata	Antelope Bitterbrush	0.5
Krascheninnikovia lanata	Winterfat	0.2
Grass Species		
Pseudoroegneria spicata spp. *spicata*	Bluebunch wheatgrass	1.0
Agropyron smithii	Western wheatgrass	1.5
Leymus cinereus	Great Basin wildrye	1.0
Achnatherum hymenoides	Indian ricegrass	0.5
Elymus lanceolatus spp. *lanceolatus*	Thickspike wheatgrass	1.0
Elymus elymoides	Bottlebrush squirreltail	0.5
Poa secunda	Sandberg's bluegrass	0.1
Forb Species		
Linum lewisii	Appar blue (Lewis') flax	0.5
Onobrychus viciifolia	Remont sainfoin	2.0
Penstemon palmeri	Palmer's penstemon	0.1
Crepis sp.	Hawksbeard	0.1
Achillea millefolium var. *occidentalis*	Western yarrow	0.5
Sphaeralcea coccinea ssp. *Elata*	Scarlet globemallow	2.0
Balsamorhiza sagittata	Arrowleaf balsamroot	0.1
Calochorus nuttallii	Sego lily	0.1
Mertensia sp.	Bluebells	0.1
Astragalus sp.	Milkvetch	0.1
Nothocalais troximoides	Sagebrush false dandelion	0.1
Eriogonum umbellatum	Sulphur flower buckwheat	0.1
Lomatium foeniculaceum	Desert-parsley	0.1
Total		**12.6**

Note: The above is a list of BLM-approved reclamation species; the actual seed mixture would vary from one area to another. The BLM, NDOW, and Barrick would decide upon the actual seed mix before seeding of a particular area.

Source: Barrick 2012a,b; USDA 2010.

The proposed seed mixtures and application rates are subject to modification based upon the actual results of concurrent reclamation within the proposed project areas, revegetation test plots, or changes by the BLM in seed mixture recommendations. Proposed modifications to the seed mixture specifications may be made after consultation with BLM staff with expertise in plant ecology or botany and a modification to the specifications is approved in writing by BLM. Sagebrush re-establishment with seedlings would be considered in consultation with NDOW to increase recovery times and to reduce impacts to certain sagebrush obligate species, such as the greater sage-grouse.

Revegetation monitoring would be conducted during the required monitoring period to evaluate and select successful, site-specific reclamation measures that may be found to more effectively achieve BLM reclamation standards. For example, alternate plant species might be demonstrated to be better adapted to different geomorphic settings or preferable growth media amendments may be found through testing. Additionally, various surface preparation techniques would be evaluated for success in promoting plant establishment and resistance to soil erosion. Information from current NOA reclamation programs that have been conducted in coordination with the BLM and NDEP would continue to be incorporated within the proposed reclamation program. The Monitoring Plan (NOA PoO, Appendix R and SOA PoO, Appendix Q) details the proposed revegetation monitoring procedures.

Revegetation efforts would be determined to be successful and complete upon demonstrating compliance with Nevada Guidelines for Successful Reclamation (NDEP 1998) and upon approval by the BLM and NDEP. The results of revegetation monitoring would be used in conjunction with these guidelines to determine applicable vegetation release criteria under the proposed activities.

A Noxious Weed Control Plan (NOA PoO, Appendix Q and SOA PoO, Appendix P) was prepared in conformance with NRS Chapter 555 and NAC (Barrick 2012a,b). The Noxious Weed Control Plan outlines prevention, treatment, and monitoring techniques proposed to prevent the long-term establishment of noxious weed and invasive species populations which meet post-mining land use objectives. An annual Plan summary outlines the monitoring and new inventories that may have been undertaken during the year. Modifications to the Noxious Weed Control program may occur in consultation with the BLM and NDEP.

2.4.4.6 Facility Reclamation

Open Pits

Mining would result in open pit excavations to varying depths. Overall, pit slopes would range from 30 to 55 degrees, depending on geological and geotechnical considerations. Actual slope angles would be subject to engineering studies, conditions encountered during actual mining operations, and MSHA regulations and guidelines. Upon cessation of mining activities the bench slopes will naturally degrade due to weathering and erosion reducing the bench slope angles and reduction in bench slope height to approximately the material's angle of repose.

Post-closure open pit slope configuration would be controlled by several parameters and include the geometry of the ore body, geologic and geotechnical characteristics of the host rock, equipment constraints, and safe operating practices. As mining progresses, an ongoing geotechnical program would be conducted to confirm the assumptions made during open pit design. Geologic structural mapping, slope stability analysis, and open pit wall and groundwater level monitoring would be performed to optimize the open pit design and to help ensure pit stability during operations. Post-mining access to these pits would be precluded by the construction of post-mining safety barriers. The berms would serve as surface water control structures to preclude the flow of meteoric water into the pits.

The pit slopes and benches prohibit the reclamation practice of growth media replacement and revegetation due to access logistics and safety concerns. The open pit ramps would be barricaded to prevent entrance. The open pit floors and ramps are expected to be competent rock surfaces that would be stable without reclamation. These areas have little or no potential to support vegetation.

There are no plans to attempt revegetation within the open pits at closure, with the exception of open pit backfill areas that are constructed to a height above the rim of the open pit. These backfill areas would be reclaimed in the same manner as RDAs and/or yards, as applicable.

Rock Disposal Areas

As an RDA is constructed, the slopes of individual benches would be allowed to stand at the natural angle of repose, or approximately 38 degrees (1.3H:1V). Generally, RDAs would be placed using a lift/bench approach that is designed with bench setbacks sufficient to approximate the post-reclamation configuration employing 2.5H:1V or 3H:1V slopes. This construction method provides both operational stability and a reduction of required reclamation effort. Preliminary slope analyses (NOA PoO, Appendix S and SOA PoO, Appendix R) indicated factors of safety for the reclaimed slopes of greater than 1.5 for static conditions and greater than 1.1 for seismic conditions.

The RDAs would be reclaimed to meet the following general objectives: reduced slope erosion, mass stability, rounded edges, revegetated surfaces, and rates of soil loss consistent with the surrounding topographic features. The final slopes of the RDAs would vary, with slight benches remaining at required intervals to reduce surface water flow velocities and erosion. As shown in the RUSLE analyses, reducing the slope length by providing a horizontal catch bench would result in significantly less erosion from RDA surfaces.

Reclamation of the RDAs would be conducted concurrently with regular mine operations to the extent practicable. The RDAs generally would be constructed in multiple lifts from the base up to the final elevation, with setbacks between lifts to facilitate final grading. Where RDAs would be constructed in areas of moderate or severe topographic relief, complete salvaging of growth media would be more difficult. In these areas, the soil horizon may be dozed downhill to form a large berm at the bottom of the ultimate regraded RDA, or may have to be abandoned, depending on the feasibility of salvage operations. Once the RDA has been regraded, the growth media berm would be hauled up onto the reshaped RDA for placement and spreading. The berm also would reduce the potential of rocks rolling and scattering downhill during RDA construction.

Enhanced reclamation for RDAs that compromise more than 20% PAG would be treated according to the BLM's Waste Rock Characterization and Handling Guidelines. To enhance evapo-transpiration (ET), the area would then be seeded with the appropriate seed mixture, as determined at the time of closure in consultation with the BLM and NDEP. As discussed previously, Hydrus 1-D cover modeling results and analyses of samples from 9 legacy RDAs at Bald Mountain support the cover design proposed for RDAs to minimize infiltration of meteoric water and oxygen.

Heap Leach Facilities

The proposed HLFs would be decommissioned in accordance with NDEP regulations and guidelines for closure as summarized in Section 2.4.4, Reclamation. Final closure plans for the proposed BMM 2/3, LBM, North Poker Flats, South Poker Flats, and Winrock HLFs are anticipated to follow those closure plans of other HLFs already evaluated and successfully completed within the Bald Mountain Mining District including the Yankee, BMM Pad No. 1, Casino/Winrock, ARM, and LBM HLFs.

Chemical Stabilization

Prior to closure, active cyanide addition to the heap leach pad would cease. Heap solution would be recirculated to reduce free cyanide. Proposed HLF reclamation activities would commence once chemical stabilization of the spent leach material is achieved and recirculation is completed. Chemical stabilization of the HLFs is required to obtain permanent closure. NAC 445A.379 defines "stabilized" as "the condition which results when contaminants in a material are bound or contained so as to prevent them from degrading waters of the state under the environmental conditions that may be reasonably expected to exist at a site."

Geochemical investigations and empirical modeling that have been conducted at existing closed facilities within the Bald Mountain Mining District indicated recirculation or rinsing beyond the point in time where economic gold recovery is no longer achieved provided no additional benefits to long-term chemical stability. Further, the evapo-concentration of salts and metal resulting from extended recirculation may slow stabilization. Therefore, rinsing of the proposed heap leach pads is not proposed as it would not be beneficial or required to stabilize the HLFs.

Regrading

To facilitate closure and reclamation, the proposed HLFs would be constructed in operational lifts 10 to 30 feet high, with setback benches of approximately 25 feet, resulting in overall slopes averaging approximately 3H:1V. Preliminary slope analyses (NOA PoO, Appendix S and SOA PoO, Appendix R) indicated factors of safety for the reclaimed slopes of greater than 1.5 for static conditions and greater than 1.1 for seismic conditions. Upon completion of the maximum build-out of the HLFs and prior to cessation of operations, material would be moved, as necessary, to ensure 3H:1V slopes are achieved and regraded material remains on the liner.

When no longer required for evaporation of fluids, the surface solution circulation piping would be removed, and the perimeter ditches would be filled with a protective layer of clean growth media and/or rock. Side-slopes would then be regraded to match closely with the crest of the perimeter collection ditches in preparation for the placement of soil cover. Site closure studies (Barrick 2012a,b) indicate the benefit of placement of 18 to 36 inches of growth media on the reclaimed HLFs to provide a stable post-closure landform and reduce the infiltration of waters. A thicker cover on the spent HLFs as compared with other facilities (e.g., RDAs) would allow retention of water in the cover material during snow melt and precipitation events and make this water readily available for uptake by plants. By retaining the water in the cover material, the amount of water infiltrating is reduced, thus minimizing the draindown solution that would be handled by ET cells during closure and post-closure.

The recontoured HLFs would be covered with 18 to 24 inches of growth media, based on this research and past success at other closed facilities within the existing BMM NOA and SOA. Revegetation of the heaps would be conducted following growth media placement as described in Section 2.4.4.5, Surface Preparation, Revegetation, Seeding, and Weed Control. To minimize erosion until vegetation has been re-established, silt fences, sediment traps, or other appropriate erosion control devices would be installed, as necessary. Storm water diversion structures would be constructed upgradient of the HLFs to prevent impacts from storm water run-off. These structures would not be reclaimed but would be retained to minimize erosion over the long term.

Long-term Fluid Management

As the HLFs are stabilized and closed, the long-term heap drainage would be routed to an ET cell or an evaporation cell (E-cell) to further reduce or eliminate the discharge from the system. Long-term heap drainage refers to drainage from the HLF after active evaporation is no longer needed to reduce the draindown, and where which the draindown would be solely managed through the ET cell or E-cells. This time period varies with each HLF but typically ranges from several years to 20 years. The ET cells or E-cells are typically constructed by converting the existing solution ponds. ET cells use plants to eliminate ET solution while E-cells rely strictly on evaporation to eliminate draindown solution. Initial heap water balances and empirical ET cell data indicate that site evaporation and transpiration can be employed to result in long-term, sustainable, zero-discharge stability at the site.

Site-specific data would be collected for each HLF and submitted as part of the Final Plan for Permanent Closure at least 2 years prior to the closure of each HLF. Information from the site closure studies conducted for the five closed heaps within the Bald Mountain Mining District indicated no long-term potential to degrade waters of the state (Geomega 2000; Golden 2000a,b; Placer Dome 1999a,b, 1998a-d, 1997, 1995, 1993; Rothberg et al. 2005; SRK 2005, 2004a,b, 2001; Telesto Solutions 2002a-c; USMX 1991). Four of the five HLFs included vadose (the unsaturated zone between the land surface

and the water table) infiltration systems as the final control structure. This unsaturated subsurface was shown to absorb or otherwise attenuate residual salts or metals in the drainage prior to reaching groundwater. Limiting infiltration into the heaps and removing inventory through ET cells or E-cells would be employed to provide an ecologically safe long-term closure of the heaps. Where data does not support the implementation of these technologies, alternative removal, use, or treatment of the fluids may be required.

Final closure plans for the proposed HLFs within both the proposed NOA and SOA projects are anticipated to follow those of other HLFs already evaluated and successfully completed within the Bald Mountain Mining District.

Process Ponds

Solids would be present in some quantity in most of the ponds at the time of closure. Representative samples would be obtained to determine the chemical characteristics of the pond solids. Depending on the results of the characterization testing, the solids would either be left in the ponds with the pond liners folded over and buried in place, removed and placed on the HLF prior to regrading and cover, sent offsite for processing, or removed and placed in an approved landfill.

Where the ponds may be converted into a passive post-closure fluid management, E-cells or ET cells, the liners would be inspected and repaired as necessary. The pond liners would be protected with a specified 2-foot overliner layer or other suitable protective layer and then backfilled with alluvium with a fluid conveyance/distribution piping. The surface would be graded to prevent accumulation of water and to blend with the surrounding topography. A growth media cover of 12 inches would be placed over the resulting ET cell. E-cells would be left open, if used (generally based on geochemical considerations and biological risk evaluation), resulting in a lined pond. Where long-term water quality allows, E-cells may provide a new wildlife water resource.

The liners for ponds not designated as part of the closure fluid management system would be cut, folded, and left in the pond bottoms prior to backfill and reclamation of the pond. The pond would be returned to a landform that is free-draining and supports post-closure revegetation through placement of an average of 12 inches of growth media.

Haul and Access Roads

Within the proposed project areas, haul roads, access roads, and safety berms would be recontoured or regraded approximately to original topography, where possible. Where the road is located on fill, the side slopes would be rounded and regraded to 3H:1V. Finished slopes would be relatively similar to the surrounding topography. Compacted road surfaces would then be ripped, covered with growth media from the safety berms or road fill if required, and revegetated. Dikes and ditches that would no longer be required would be regraded. Where the fill portion of the road would be largely removed, ripping is required only where the original roadbed would otherwise be left in place and covered near surface.

Remaining exploration and access roads would be recontoured and revegetated when no longer needed. Some access roads would be needed temporarily to access monitoring points.

The proposed project areas encompass terrain from nearly flat to greater than 50 percent slopes. Reclamation of roads in very steep terrain may not allow for meeting the closure goals described above in all cases. The cross-section design for road closure in very steep terrain would be modified to ensure no steeper than 2.5H:1V slopes, except where cut banks are on the inside of the road and located generally in bedrock. Those cuts in bedrock may remain as long-term features similar to a cliff or rock outcrop.

Roads on public lands suitable for public access or which continue to provide public access consistent with pre-mining conditions would not be reclaimed at mine closure. Narrower access roads may remain

on large haul roads after recontouring for maintenance or other post-mining land uses. Roads that would not be reclaimed would be identified during the final closure planning process in coordination with the BLM and NDEP.

Long-term Surface Water Management

Regraded slope angle, revegetation (including growth media placement), and erosion control devices would be used to limit erosion and reduce sediment in runoff following precipitation events from reclaimed RDAs, HLFs, and other slopes. Surface water would be diverted around mine features where practicable through primary storm water diversions, culverts, and secondary perimeter berms and/or ditches. Silt fences, sediment traps, or other erosion control devices would be used to prevent migration of eroded material until reclaimed slopes and exposed surfaces have demonstrated erosion stability. Barrick would maintain the site General Stormwater Permit (NVR300000) described in Section 3.3, Water Quality and Quantity, which includes maintaining drainage, erosion, and sediment control practices until after final reclamation and mine closure.

Buildings and Support Facilities

During final mine closure, buildings and structures would be dismantled and materials would be salvaged or removed to the on-site landfills or other appropriate disposal sites. Concrete foundations and slabs would be broken up using a track-hoe mounted hydraulic hammer or similar methods and buried in place under approximately 3 feet of material in such a manner to prevent ponding and to allow vegetation growth. After demolition and salvage operations are complete, the disturbed areas would be regarded to provide for propoer drainage, covered with growth media, and revegetated.

Reagents and explosives would be removed for use as product at other mines, or appropriately disposed. Surface pipelines would be removed, typically for salvage. Underground pipeline ends would be capped/plugged and left in place. Unneeded utility poles would be cut off at ground level and removed.

Closure of PCS and ACS temporary holding pads and treatment pads would be conducted by removing remaining PCS and ACS, cutting and folding liner materials in-place or removing the liner, and backfilling depressions with clean backfill, compacting, regrading slopes and berms to match existing terrain, providing growth media material, and seeding for native vegetation. The on-site PCS and ACS disposal locations would be permanently closed as part of closure activities for RDAs.

Drill Hole Plugging and Water Well Abandonment

Mineral exploration and development drill holes, and monitoring, production, and dewatering wells subject to NDWR regulations would be abandoned in accordance with applicable rules and regulations (NAC 534.425 through 534.428). Boreholes would be sealed to prevent cross contamination between aquifers and the required shallow seal would be placed to prevent contamination by surface access.

Monitoring wells associated with the processing facilities would be maintained until Barrick is released of this requirement by the NDEP. These wells would then be plugged and abandoned according to the requirements of the Nevada State Engineer.

2.4.4.7 Post-reclamation Monitoring and Maintenance

A detailed post-closure monitoring and maintenance plan would be prepared in coordination with the BLM and NDEP as part of the final closure plan process. A reclamation permit would outline the reclamation requirements including the requirement to submit an annual report to NDEP relating to the status and production of the operation and identifying each acre of land affected and land reclaimed. Post reclamation monitoring would include surface water monitoring which would continue until vegetation is established and/or until monitoring is determined by the BLM, NDWR/State Engineer, and

NDEP is no longer required. The Monitoring Plan (NOA PoO, Appendix R and SOA PoO, Appendix Q) details the proposed revegetation monitoring procedures.

Revegetation efforts would be determined to be successful and complete upon demonstrating compliance with Nevada Guidelines for Successful Reclamation (NDEP 1998) and upon approval by the BLM and NDEP. The results of revegetation monitoring would be used in conjunction with these guidelines to determine applicable vegetation release criteria under the proposed activities.

A Noxious Weed Control Plan (NOA PoO, Appendix Q and SOA PoO, Appendix P) was prepared in conformance with NRS Chapter 555 and NAC (Barrick 2012a,b). The Noxious Weed Control Plan outlines prevention, treatment, and monitoring techniques proposed to prevent the long-term establishment of noxious weed and invasive species populations which meet post mining land use objectives.

Monitoring of known populations, and subsequent treatment, would be conducted on an annual basis. An annual Plan update summary outlines the monitoring and new inventories that may have been undertaken during the year. Modifications to the Noxious Weed Control program may occur in consultation with the BLM and NDEP.

In addition, following mine closure, Barrick would conduct berm and sign maintenance, site inspections, and other necessary maintenance for the period of reclamation responsibility.

2.4.4.8 Unplanned Temporary Closure Management

Due to weather conditions, mechanical or technical difficulties, unfavorable economic conditions, litigation, severe seismic events, or other unforeseen events, mining and process facilities may have to be temporarily closed. In the event of an unplanned temporary closure, the following plan would be activated:

- Pursuant to NAC 445.445(1)(a), the BLM and NDEP would be notified within 30 days of the temporary closure of pits, RDAs, and process facilities. This notification would include a description of the procedures and controls that have been or would be initiated to maintain the process components during the temporary closure period.
- Barrick would supply the BLM and NDEP with a list of supervisory personnel who would oversee the mine facility during the temporary closure period. This list also would include the number of support staff required in each department to maintain the facility during the closure period. Standard security procedures would remain in place for the duration of the temporary closure period. Access to the site would be allowed for appropriate regulatory agency personnel.
- Pursuant to NAC 445.445(1)(b), if the interim closure period exceeds 90 days, Barrick would begin to evaluate procedures required to carry out a permanent closure of the process components. These procedures would be reviewed and approved by the BLM and NDEP. As stipulated by NAC 445.445(1)(b)(2), Barrick may petition the NDEP for an extension that would delay permanent closure. These actions would be coordinated between Barrick and the NDEP.

Pursuant to NAC 445A.399, a seasonal closure plan is required for facilities located where the mean diurnal temperature does not exceed freezing (32 degrees Fahrenheit [°F]) for 30 days or more each year. Based on a review of available data from the BMM meteorological data, the mean diurnal temperature at the proposed NOA and SOA could remain below 32°F for more than 30 days each year. Current plans do not include closure during the winter months; however, if closure is necessary due to extremely severe weather conditions, the process facilities would be temporarily closed per the following plan:

- In the event of severe winter weather conditions causing a closure, the NDEP would be notified within 30 days of a seasonal closure. The notification would include a description of the procedures and controls that have been or would be carried out to maintain the process components during the closure period.
- Heap leaching and solution processing operations would be discontinued. The addition of makeup water to the leaching circuit would stop, but the heaps would continue to be irrigated as long as possible. During severe winter weather conditions, some of the process solution may freeze on the top of the heaps; however, the solution near the bottom of the heaps and in the solution collection pipes would likely continue to flow.
- Irrigation of the heaps would continue until all process solution has been converted to ice or the weather warms enough to melt the ice on the heaps.
- Seasonal closure would continue until the weather warms enough to begin melting the ice on the heaps. At this time, process solution would be circulated between the heaps and the solution ponds. Based on operational experience, ice in the heaps would melt slowly so that draindown can be easily controlled. Once the temperature of the leaching solution increases enough so that gold recovery is favorable, the process plant would be brought back on-line. Addition of makeup water to the circuit would resume as appropriate to maintain the normal working inventory of solution. Following a seasonal closure period, but prior to startup, elements of the fluid management system would be inspected for signs of damage or deterioration.

No additional measures will be necessary to stabilize excavations and workings during an unplanned temporary closure. Interim reclamation procedures will be implemented as necessary to stabilize disturbed sites during the temporary closure period as described in Section 2.4.4.4. These procedures will be coordinated with the BLM and the NDEP. Barrick will follow the waste rock management procedures to isolate waste rock as necessary during unplanned temporary closure.

In the event of a temporary unplanned closure, the following activities would be undertaken for the storage or removal of equipment, supplies, and structures:

- Explosives would continue to be stored and handled according to federal and state regulations.
- Hazardous materials would continue to be stored, handled, and disposed of according to federal and state regulations.
- Equipment and machinery would be stored in a safe and clean condition.
- Mine equipment remaining in operation during the temporary closure, including haul trucks, loaders, drills, and personal vehicles would continue to be maintained according to standard company procedure.
- Following a temporary closure period, mine equipment would be inspected for compliance with appropriate federal and state mining regulations before mining activities resume. A thorough inspection of pipelines, drainage channels, ponds, pumping equipment, and processing equipment would be made prior to start-up. Remaining solution in the solution ponds would be processed through the metals recovery circuit or applied to the heap, and the leaching circuit would be re-established.

Supervisory personnel would ensure that regulatory requirements continue to be met during the temporary closure period. This would include monitoring, notifications, and report submittals.

Maintenance and inspection of processing facilities would take place regularly to ensure adequate storm storage capacity in the process and reclaim ponds and that the integrity of pipelines, trenches, diversion structures, berms, and embankments is maintained. Monitoring of the HLFs, solution ditch leak detection system, pond leak detection system, groundwater, and other permitted solution monitoring would

continue as outlined in project water pollution control permits during the duration of the temporary closure.

2.4.4.9 Measures to be taken during Extended Periods of Non-operation

In the event that continuous, full-scale production is interrupted due to economic considerations or unforeseen circumstances, interim reclamation may be initiated. Interim reclamation measures would include the following:

- Power lines would be inspected regularly and maintained as necessary.
- Main access roads would receive maintenance, as necessary.
- Erosion control devices would be regularly inspected and maintained.
- Buildings, equipment, and support facilities would be secured and maintained as necessary for protection of property and safety of the public and employees.

As required by NAC 519A.320(2), Barrick would notify the NDEP in writing within 90 days after project suspension that is anticipated to last longer than 120 days; the BLM also would be notified. Barrick would identify the nature and reason for the suspension, the duration of the suspension, and the events expected to result in either resumption of mining or the reclamation and closure of the proposed project. A Tentative Plan for Permanent Closure would be completed prior to constructing RDAs and process facilities.

2.5 Alternatives to the Proposed Action

As noted in the BLM Handbook (H-1790-1), the NEPA directs the BLM to “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources;…” (NEPA Sec 102(2)(E)). For the proposed project, the alternatives-driving issues included potential impacts to: 1) greater sage-grouse habitat; 2) mule deer migration; and 3) visual setting of the Pony Express National Historic Trail, Overland Stage Station, and Fort Ruby National Historic Landmark. All other substantive issues raised during scoping would be addressed through required project design features or proposed mitigation.

The purpose of alternatives analysis is to consider a reasonable range of alternatives as required to address potential resource conflicts or impacts (see Question 1b, CEQ, Forty Most Asked Questions Concerning CEQ's NEPA Regulations, March 23, 1981). This range of alternatives also needs to encompass the decision space and authority of any other agencies which have jurisdiction over resources potentially impacted by the proposed project (BLM NEPA Handbook, H-1790-1, Sec. 6.6.1). Accordingly, BLM , NDOW, and Barrick worked extensively to develop, to the extent possible, 1 kilometer (km) (3,280 feet) minimum mule deer migration widths as recommended in “Mule Deer Migratory Corridors: Minimum Width and Quantity – Bald Mountain Mine” (NDOW 2012a). The minimum recommended migration widths were 1,968 feet based on literature review (Harrison 1992). Furthermore, recommendations within the report expressed the need for multiple existing corridors with no fewer than 3 existing corridors for the entire width (12 miles) of the project and to develop a monitoring plan to address these recommendations, as well as greater sage-grouse habitat and visual setting concerns of the Pony Express National Historic Trail, Overland Stage Station, and Fort Ruby National Historic Landmark, the BLM is retaining two action alternatives to the Proposed Action for detailed analysis, as described below.

For clarity and conciseness, the description of the North and South Operations Area Facilities Reconfiguration Alternative (Reconfiguration Alternative) (Section 2.5.1) and the Western Redbird Modification Alternative (WRM Alternative) (Section 2.5.2) are limited to those aspects of the alternative that differ from the previously described Proposed Action. Additionally, all design features and applicant-

committed measures described for the Proposed Action would, as applicable, would be required for the Reconfiguration Alternative and the WRM Alternative.

2.5.1 North and South Operations Area Facilities Reconfiguration Alternative

The Reconfiguration Alternative was developed to address potential impacts to mule deer migration; greater sage-grouse leks and associated habitats; visual impacts affecting the cultural setting of the Pony Express National Historic Trail, Ruby Valley Pony Express Station, and Fort Ruby National Historic Landmark; and visual impacts affecting visitor aesthetics at the Ruby Lake NWR. Under the Reconfiguration Alternative, all aspects would be identical to the Proposed Action with the exception of the modifications listed in **Table 2.5-1** below. There is an important distinction between the Proposed Action and Reconfiguration Alternative in how previously authorized disturbance is addressed. Under the Reconfiguration Alternative, some of the previously authorized disturbance would not be developed/disturbed to the extent authorized. In these areas the disturbance would generally be confined to the existing disturbance, and there would be no expansion of disturbance to the previously authorized amount. The amount of acreage reduction in authorized disturbance is presented where applicable. Under the Proposed Action, previously authorized disturbance would be developed to the full extent authorized.

Table 2.5-1 Summary of Modifications to the Proposed Action under the Reconfiguration Alternative

Feature Name	Feature Type	Modification from the Proposed Action
North Operations Area		
BMM Ancillary	Ancillary Facility	Reduced footprint
Casino GMS	GMS	Reduced to existing footprint
Numbers GMS	GMS	Reduced footprint
Poker Flats GMS	GMS	Reduced footprint
RBM GMS	GMS	Reduced to existing footprint
Redbird GMS	GMS	Reduced footprint
Royale GMS	GMS	Eliminated
South Water Canyon GMS	GMS	Reduced footprint
Winrock GMS	GMS	Reduced footprint
Casino Haul Road	Haul Road	Eliminated
LBM Haul Road	Haul Road	Reduced footprint
Mahogany Canyon Haul Road	Haul Road	Eliminated
Numbers Haul Road	Haul Road	Reduced footprint
Rat Haul Road	Haul Road	Reduced footprint
Royal Haul Road	Haul Road	Eliminated
Sage Flats Haul Road	Haul Road	Reduced to existing footprint
Top Pit Haul Road	Haul Road	Reduced footprint
Winrock Haul Road	Haul Road	Reduced footprint
North Poker Flats Heap	Heap Leach	Eliminated
Winrock Heap	Heap Leach	Reduced to existing footprint
Casino Interpit	Interpit	Eliminated
LBM Interpit	Interpit	Eliminated
Poker Flats Interpit	Interpit	Reduced footprint
Rat Interpit	Interpit	Reduced to existing footprint

Table 2.5-1 Summary of Modifications to the Proposed Action under the Reconfiguration Alternative

Feature Name	Feature Type	Modification from the Proposed Action
Numbers Interpit	Interpit	Reduced footprint
Royal Interpit	Interpit	Eliminated
Top Pit Interpit	Interpit	Reduced footprint
Office Area	Office Area	Reduced footprint
Casino Pit	Pit	Reduced to existing footprint
LBM Pit	Pit	Reduced to existing footprint
LJR 1 Pit	Pit	Reduced to existing footprint
LJR 2 Pit	Pit	Reduced to existing footprint
Numbers Pit Complex	Pit	Reduced footprint
Rat Pit	Pit	Reduced to existing footprint
Royale Pit	Pit	Eliminated
South Duke Pit	Pit	Eliminated
LBM Powerline	Powerline Corridor	Eliminated
LBM Communication Powerline	Powerline Corridor	Relocated
Winrock Powerline	Powerline Corridor	Eliminated
BMM No. 1 Process Area	Process Area	Reduced to existing footprint
North Poker Flats Process Area	Process Area	Eliminated
Winrock Process Area	Process Area	Eliminated
Casino North RDA	RDA	Eliminated
Casino South RDA	RDA	Reduced to existing footprint
East Sage RDA	RDA	Increased footprint
Horseshoe RDA	RDA	Reduced to existing footprint
LBM RDA 1	RDA	Eliminated
LBM RDA 2	RDA	Eliminated
North 1 RDA	RDA	Reduced footprint
North 2 RDA	RDA	Eliminated
North 3 RDA	RDA	Eliminated
North 4 RDA	RDA	Reduced to existing footprint
North 5 RDA	RDA	Eliminated
Rat East RDA	RDA	Reduced to existing footprint
Rat West RDA	RDA	Reduced to existing footprint
RBM North RDA	RDA	Reduced to existing footprint
Royale North RDA	RDA	Eliminated
Royale South RDA	RDA	Eliminated
South Duke RDA 2	RDA	Eliminated
South Water Canyon RDA	RDA	Reduced to existing footprint
Winrock Waterline	Waterline Corridor	Eliminated
South Operations Area		
Gator GMS	Ancillary Facility	Eliminated
Vantage Ancillary	Ancillary Facility	Increased footprint

Table 2.5-1 Summary of Modifications to the Proposed Action under the Reconfiguration Alternative

Feature Name	Feature Type	Modification from the Proposed Action
Gator GMS	GMS	Eliminated
Vantage GMS	GMS	Reduced footprint
Yankee GMS	GMS	Increased footprint
Gator Powerline	Powerline Corridor	Eliminated
Vantage Powerline	Powerline Corridor	Increase of existing footprint
Gator Process Area	Process Area	Eliminated
Vantage Process Area	Process Area	Increased footprint
Yankee South RDA	RDA	Reduced footprint
Gator Heap	Heap Leach	Eliminated
Vantage Heap	Heap Leach	Increased footprint

Source: Barrick 2016, 2014a.

The Reconfiguration Alternative would eliminate 1,429 acres of disturbance from the Proposed Action and an additional 1,923 acres of previously authorized disturbance would not be constructed, representing a 3,352-acre (47 percent) reduction in comparison to the Proposed Action. The total proposed disturbance under the Reconfiguration Alternative would be 3,734 acres. **Table 2.5-2** summarizes the Reconfiguration Alternative surface disturbance in comparison to the Proposed Action.

Table 2.5-2 Reconfiguration Alternative – Surface Disturbance Comparison

Project Component	Proposed Action Surface Disturbance (acres)[1,2]		Reconfiguration Alternative Surface Disturbance (acres)[1]		Difference (acres/ percent)[1]
	Proposed Surface Disturbance	Withdrawn Authorized Disturbance[5]	Proposed Surface Disturbance	Withdrawn Authorized Disturbance[5]	
Open Pits	1,210	0	885	-163	-488 / -40
Rock Disposal Areas	2,787	0	2,550	-1,325	-1,562 / -56
Heap Leach Facilities[3]	1,156	0	678	0	-478 / -41
Support Facilities[4]	1,855	-11	1,465	-447	-826 / -45
Exploration	90	0	90	0	0
Total	**7,097**	**-11**	**5,668**	**-1,934**	**-3,352 / -47**

[1] Acreage values were determined from geographic information system (GIS) data that combined the NOA and SOA project components. Acreage values may vary due to rounding.

[2] Refer to **Table 2.4-1** for detailed acreages by project component.

[3] Heap leach facilities include heap leach facilities, tailing impoundments, and process areas.

[4] Support facilities include haul roads, interpit areas, secondary/exploration roads and pads, well access roads, maintenance/administrative facilities, silt pits, interpit, GMSs, monitoring wells, communication sites, transmission line corridors, and other ancillary disturbances. Support facility acreage includes 12 acres of facilities for which locations are not yet known. These acreages are not included in the GIS.

[5] Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the Reconfiguration Alternative.

Source: Barrick 2015, 2014a, 2012a.

2.5.1.1 North Operations Area Project

Figure 2.5-1 illustrates the proposed life-of-mine (full build-out) for the proposed NOA project under the Reconfiguration Alternative. **Table 2.5-3** compares the surface disturbance acreages within the NOA between the Proposed Action and the Reconfiguration Alternative.

Table 2.5-3 Reconfiguration Alternative – Surface Disturbance Comparison for the North Operations Area

Project Component	Proposed Action Surface Disturbance (acres)[1,2]		Reconfiguration Alternative Surface Disturbance (acres)[1]		Difference (acres/percent)[1]
	Proposed Surface Disturbance	Withdrawn Authorized Disturbance[5]	Proposed Surface Disturbance	Withdrawn Authorized Disturbance[5]	
Open Pits	863	0	564	-163	-462 / -54
Rock Disposal Areas	1,545	0	1,351	-1,325	-1,519 / -98
Heap Leach Facilities[3]	773	0	507	0	-266 / -34
Support Facilities[4]	1,176	-11	832	-447	-780 / -66
Exploration	0	0	0	0	0
Total	**4,357**	**-11**	**3,254**	**-1,934**	**-3,025 / -69**

1 Acreage values were determined from GIS data for the NOA project components only. Acreage values may vary due to rounding.

2 Refer to **Table 2.4-1** for detailed acreages by project component.

3 Heap leach facilities include heap leach facilities, tailing impoundments, and process areas.

4 Support facilities include haul roads, interpit areas, secondary/exploration roads and pads, well access roads, maintenance/administrative facilities, silt pits, interpit, GMSs, monitoring wells, communication sites, transmission line corridors, and other ancillary disturbances. Support facility acreage includes 6 acres of facilities for which locations are not yet known. These acreages are not included in the GIS.

5 Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the Reconfiguration Alternative.

Source: Barrick 2015, 2014a, 2012a.

The NOA PoO boundary would be expanded to the north in the vicinity of the Top Pit Complex to allow for reconfiguration of the East Sage RDA. This reconfiguration was designed to provide for an additional east side undisturbed mule deer migration corridor that is approximately 790 feet wide at its narrowest point between the reclaimed toe of the East Sage RDA disturbance and the proposed Poker Flats Pit (**Figure 2.5-1**). The NOA PoO boundary would increase by approximately 487 acres in comparison with the Proposed Action to form a NOA PoO boundary consisting of 31,572 acres. The PoO boundary expansion would be located on unpatented lode claims that are owned, leased, or controlled by Barrick on BLM-administered public lands.

Designated Mule Deer Migration Corridors

In addition to the mule deer design features previously discussed in Section 2.4.3.1, multiple corridors designed to allow seasonal movement of mule deer through the NOA have been included under the Reconfiguration Alternative. **Figure 2.5-1** shows the locations of the three designated mule deer migration corridors in the NOA. These migration corridors would include previously undisturbed areas and areas of disturbance that have been reclaimed. For the purposes of this EIS, any reference to "undisturbed corridors" in relation to the three designated mule deer migration corridors means no large scale disturbance. Haul roads and exploration activities occur within "undisturbed corridors." **Table 2.5-4** presents the minimum distance of undisturbed corridor widths between active mine features and also illustrates the combined corridor widths of undisturbed and reclaimed portions of the designated mule deer migration corridors as part of the Reconfiguration Alternative.

Table 2.5-4 Reconfiguration Alternative – Summary of the Minimum Distance Between Representative Bounding Disturbance Features Abutting Designated Mule Deer Migration Corridors

Bounding Disturbance Features	Minimum Distance of Undisturbed Lands (feet)	Minimum Total Distance of Undisturbed and Reclaimed Lands
Numbers Pit Complex to RBM North RDA	1,925	3,940
Redbird Pit to Rat Pit	2,570	N/A
Redbird Pit to Rat East RDA	1,855	2,410
Redbird RDA to Rat Pit	2,380	3,795
East Sage RDA to Poker Flats Pit	790	1,980
Poker Flats RDA to Duke Pit	730	4,450
Poker Flats Pit to South Duke RDA1	2,675	4,345

Greater Sage-grouse Habitat and Leks

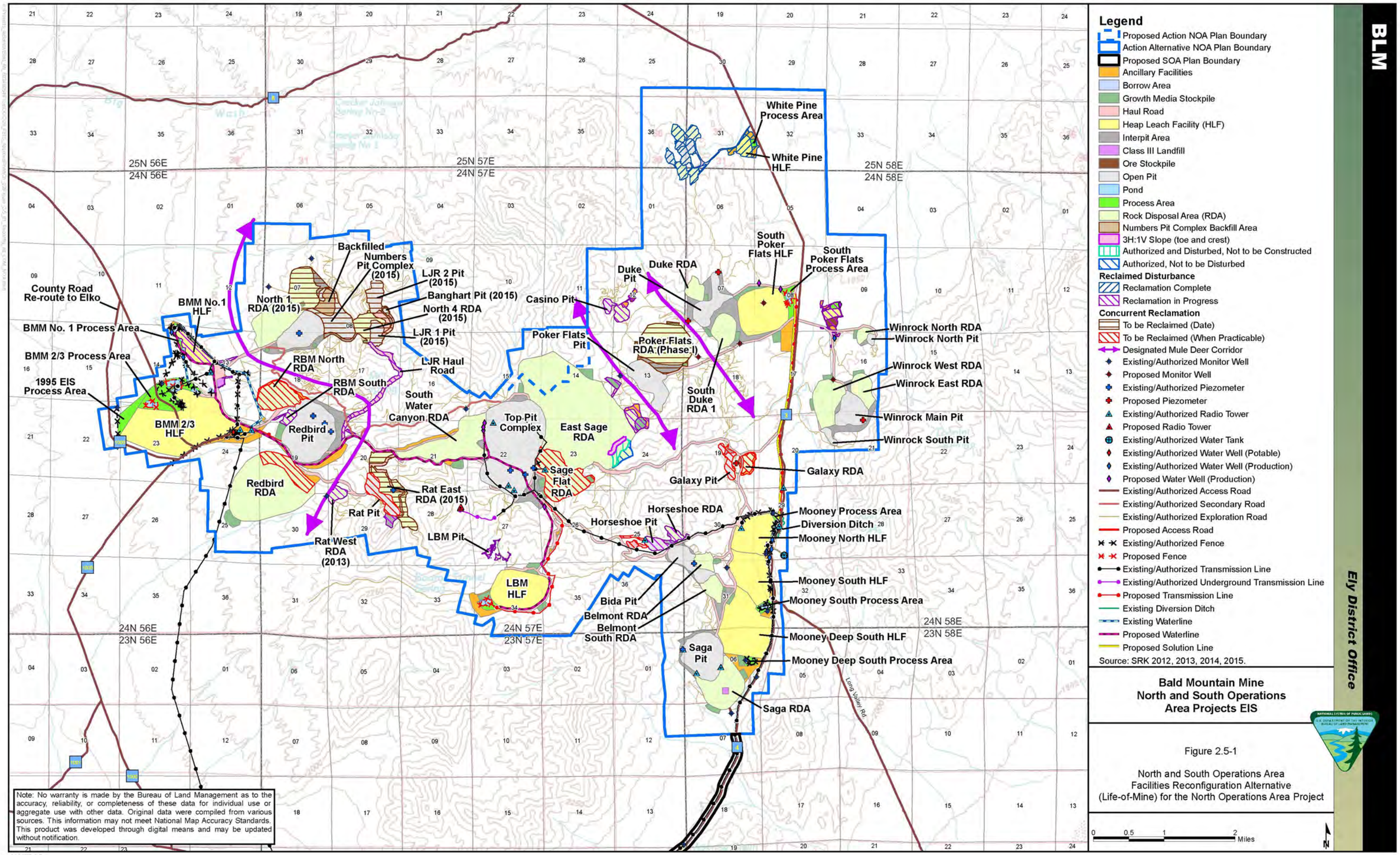
The Reconfiguration Alternative was developed in part to address concerns related to project impacts to greater sage-grouse habitat and leks. The removal of the Casino, and Royale facilities from the Reconfiguration Alternative reduces impacts to greater sage-grouse habitat. Elimination of the Royale facilities also reduces impacts to greater sage-grouse leks.

Visual Aesthetics

The Reconfiguration Alternative addresses concerns of project impacts to visual aesthetics. The removal of the Royale facilities and North Poker Flats HLF from the Reconfiguration Alternative substantially reduces visual impacts affecting the cultural setting of the Pony Express National Historic Trail, Ruby Valley Pony Express Station, and Fort Ruby National Historic Landmark. The Reconfiguration Alternative also reduces impacts affecting visitor aesthetics at the Ruby Lake NWR.

Land Ownership and Mining Claims

Surface ownership and mining claims within the proposed NOA would remain consistent with those presented in Section 2.4.1.1, Land Ownership and Mining Claims.


Legend
Proposed Action NOA Plan Boundary
Action Alternative NOA Plan Boundary
Proposed SOA Plan Boundary
Ancillary Facilities
Borrow Area
Growth Media Stockpile
Haul Road
Heap Leach Facility (HLF)
Interpit Area
Class III Landfill
Ore Stockpile
Open Pit
Pond
Process Area
Rock Disposal Area (RDA)
Numbers Pit Complex Backfill Area
3H:1V Slope (toe and crest)
Authorized and Disturbed, Not to be Constructed
Authorized, Not to be Disturbed
Reclaimed Disturbance
Reclamation Complete
Reclamation in Progress
Concurrent Reclamation
To be Reclaimed (Date)
To be Reclaimed (When Practicable)
Designated Mule Deer Corridor
Existing/Authorized Monitor Well
Proposed Monitor Well
Existing/Authorized Piezometer
Proposed Piezometer
Existing/Authorized Radio Tower
Proposed Radio Tower
Existing/Authorized Water Tank
Existing/Authorized Water Well (Potable)
Existing/Authorized Water Well (Production)
Proposed Water Well (Production)
Existing/Authorized Access Road
Existing/Authorized Secondary Road
Existing/Authorized Exploration Road
Proposed Access Road
Existing/Authorized Fence
Proposed Fence
Existing/Authorized Transmission Line
Existing/Authorized Underground Transmission Line
Proposed Transmission Line
Existing Diversion Ditch
Existing Waterline
Proposed Waterline
Proposed Solution Line
Source: SRK 2012, 2013, 2014, 2015.
Bald Mountain Mine
North and South Operations
Area Projects EIS
Figure 2.5-1
North and South Operations Area
Facilities Reconfiguration Alternative
(Life-of-Mine) for the North Operations Area Project
0 0.5 1 2 Miles
N
BLM
Ely District Office
25N 56E
24N 56E
25N 57E
24N 57E
25N 58E
24N 58E
24N 56E
23N 56E
24N 57E
23N 57E
24N 58E
23N 58E
White Pine Process Area
White Pine HLF
South Poker Flats HLF
South Poker Flats Process Area
Duke Pit
Duke RDA
Casino Pit
Poker Flats Pit
Poker Flats RDA (Phase I)
South Duke RDA 1
Backfilled Numbers Pit Complex (2015)
LJR 2 Pit (2015)
Banghart Pit (2015)
North 4 RDA (2015)
LJR 1 Pit (2015)
North 1 RDA (2015)
LJR Haul Road
County Road Re-route to Elko
BMM No.1 HLF
BMM No. 1 Process Area
BMM 2/3 Process Area
1995 EIS Process Area
BMM 2/3 HLF
RBM North RDA
RBM South RDA
Redbird Pit
Redbird RDA
South Water Canyon RDA
Top Pit Complex
East Sage RDA
Sage Flat RDA
Rat East RDA (2015)
Rat Pit
Rat West RDA (2013)
LBM Pit
LBM HLF
Horseshoe RDA
Horseshoe Pit
Galaxy Pit
Galaxy RDA
Winrock North RDA
Winrock North Pit
Winrock West RDA
Winrock East RDA
Winrock Main Pit
Winrock South Pit
Mooney Process Area
Diversion Ditch
Mooney North HLF
Mooney South HLF
Mooney South Process Area
Mooney Deep South HLF
Mooney Deep South Process Area
Bida Pit
Belmont RDA
Belmont South RDA
Saga Pit
Saga RDA
Long Valley Rd
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

4/4/2016

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Schedule and Work Force

The NOA project would commence on the same schedule as the Proposed Action, beginning as early as 2016, pending permit approval, and have a construction and operational life of ten years. Construction-related activities would commence upon permit approval and continue through year 7. Operation-related activities such as mining and ore processing would commence in mine year 1 and continue through year 10. Leach material processing would continue for approximately 3 years after mining operations cease. Concurrent reclamation of the Poker Flats RDA would be conducted. While concurrent reclamation occurs during active construction and operations, final reclamation activities would begin the first year and would be conducted through year 25. Reclamation monitoring would be conducted for a minimum of 3 years for each reclaimed area or until revegetation stability has been achieved. Post-closure fluid monitoring would continue for a minimum of 5 years for a maximum of 30 years per BMRR requirements for each closed component. This timeframe may vary dependent on the post reclamation responsibilities as outlined in the PoO. **Tables 2.5-5** and **2.5-6** illustrate the project timeline and conceptual schedule for reclamation, closure, and post-closure monitoring activities under the Reconfiguration Alternative for the proposed NOA project, respectively.

The NOA work force would be reduced in size in comparison to the Proposed Action. Work force estimations within the NOA for the Reconfiguration Alternative would vary from a maximum of 511 employees (391 full time employees/120 contractors) in 2018 to a minimum of 41 employees (36 full time employees/5 contractors) in year 2016.

Numbers Area

The following section outlines the reconfiguration and/or reduction to existing disturbance of each facility located in the Numbers Area within the NOA project under the Reconfiguration Alternative. **Figures 2.5-1** and **2.5-2** illustrate the following alternative facility reconfigurations within the Numbers Area.

Facility development will involve sequencing where the Numbers 15 pit will not be mined concurrently with the Numbers 10 pit or the Redbird Pit. Completion of mining and reclamation of the Numbers 10 pit disturbance will be completed in 2015.

Open Pits

Existing/authorized open pits within the western extent of the proposed NOA would be modified from the Proposed Action to facilitate a circuitous west side designated mule deer migration corridor. The designated corridor generally is undisturbed. **Figure 2.5-2** illustrates the location of the Numbers Pit Complex reconfiguration. The Numbers Complex would be partially backfilled with carbonate-rich material. The following alternative open pit configuration is proposed within the Numbers Area.

- The Numbers Pit Complex, consisting of several smaller existing/authorized pits (2/3 Pit, 1/5 Pit, Numbers 10 Pit, and Numbers 15 Pit) would be reconfigured due to partial backfilling. During excavation of the Numbers 10 Pit, the waste rock would be used as carbonate-rich backfill for the existing 2/3 Pit. Waste rock would be placed above the original ground surface in the pit ramp area within Numbers 10 Pit extending the North 1 RDA to the east. As a result of reconfiguration, the disturbance footprint would be reduced by approximately 69 acres. The 'Numbers Pit Complex Backfill Area' hatching shown in **Figure 2.5-2** illustrates the pit and RDA disturbance footprints. Mining of the Numbers 10 Pit would be completed by 2015. Other Numbers 10 Pit related disturbance would be reclaimed by 2015 as well. The Numbers 1/5 Pit would not be mined concurrently with the Numbers 10 or Redbird pits.

  LJR Pits 1 and 2 would not be mined beyond the existing authorized footprint. The disturbance footprint would be reduced by 18 acres. Both pits would be reclaimed in 2015.

Table 2.5-5 North and South Operations Area Facilities Reconfiguration Alternative – Project Timeline for the North Operations Area Project[1]

Operational Activity (Project components closure and reclamation takes place during the operational mine life)	Years									
	1-4	5-7	8-10	11-13	14-17	18-21	22-25	26-28	29-35	36-64
Construction										
Operation										
Reclamation										
Closure[2]										
Reclamation Monitoring										
Post-Closure Monitoring[3]										

[1] This schedule is conceptual and subject to changes due to mining sequences that may affect the overall plan.

[2] Closure consists of fluid management and reduction at heap leach facilities.

[3] Post-closure monitoring would be conducted for at least five years, and could continue up to 30 years, following completion of heap leach processing based on current NDEP regulations. The duration of the BLM's post-closure monitoring would depend on the project's final closure plan and its implementation.

Source: Barrick 2014b,c.

Table 2.5-6 North and South Operations Area Facilities Reconfiguration Alternative - Conceptual Reclamation Schedule for the North Operations Area Project[1,2]

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045 to 2050	2051 to 2080
Component	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30 to 35**	**36 to 64**
Reclamation																															
Open Pit Closure																															
Pit Safety Berm Reclamation																															
Rock Disposal Area Reclamation[3]																															
Heap Leach Facility Earthwork																															
Process Ponds Reclamation																															
Haul Roads, Access Roads, Ancillary Facilities (Non-structure related) Reclamation																															
Structure Demolition and Reclamation																															
Processing Facility Site Reclamation																															
Well Abandonment																															
Exploration																															
Closure[4]																															
Interim Fluid Management																															
Fluid Inventory Reduction - Recirculation and Active Evaporation																															
Fluid Inventory Reduction - ET Cells																															
Monitoring																															
Reclamation Monitoring																															
Post-Closure Monitoring																															

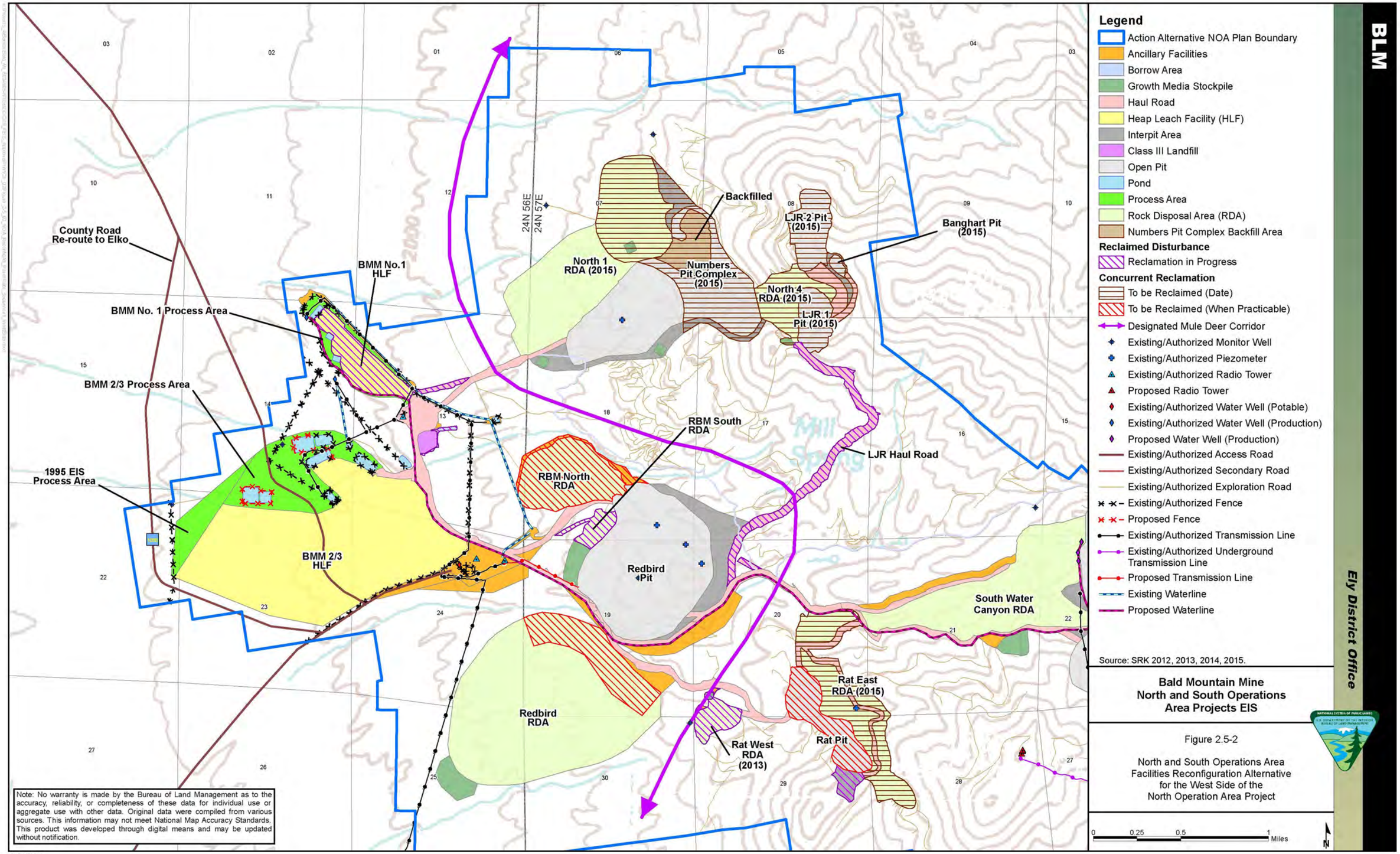
[1] This schedule is conceptual and subject to changes due to mining sequences that may affect the overall plan.

[2] The entirety of this conceptual reclamation schedule is based on reclamation activities for bonding purposes. Concurrent reclamation of the Poker Flats RDA (Phase I) would be performed simultaneously with reclamation activities for bonding purposes.

[3] Phase 1 reclamation for the Poker Flats RDA would occur in years 4-5.

[4] Closure consists of fluid management and reduction at heap leach facilities.

Source: Barrick 2014c.


County Road
Re-route to Elko
BMM No.1
HLF
BMM No. 1 Process Area
BMM 2/3 Process Area
1995 EIS
Process Area
BMM 2/3
HLF
24N 56E
24N 57E
North 1
RDA (2015)
Backfilled
Numbers
Pit Complex
(2015)
LJR 2 Pit
(2015)
North 4
RDA (2015)
LJR 1
Pit (2015)
Banghart Pit
(2015)
RBM South
RDA
RBM North
RDA
LJR Haul Road
Redbird
Pit
Redbird
RDA
South Water
Canyon RDA
Rat East
RDA (2015)
Rat Pit
Rat West
RDA
(2013)
Legend
Action Alternative NOA Plan Boundary
Ancillary Facilities
Borrow Area
Growth Media Stockpile
Haul Road
Heap Leach Facility (HLF)
Interpit Area
Class III Landfill
Open Pit
Pond
Process Area
Rock Disposal Area (RDA)
Numbers Pit Complex Backfill Area
Reclaimed Disturbance
Reclamation in Progress
Concurrent Reclamation
To be Reclaimed (Date)
To be Reclaimed (When Practicable)
Designated Mule Deer Corridor
Existing/Authorized Monitor Well
Existing/Authorized Piezometer
Existing/Authorized Radio Tower
Proposed Radio Tower
Existing/Authorized Water Well (Potable)
Existing/Authorized Water Well (Production)
Proposed Water Well (Production)
Existing/Authorized Access Road
Existing/Authorized Secondary Road
Existing/Authorized Exploration Road
Existing/Authorized Fence
Proposed Fence
Existing/Authorized Transmission Line
Existing/Authorized Underground Transmission Line
Proposed Transmission Line
Existing Waterline
Proposed Waterline
Source: SRK 2012, 2013, 2014, 2015.
Bald Mountain Mine
North and South Operations
Area Projects EIS
Figure 2.5-2
North and South Operations Area
Facilities Reconfiguration Alternative
for the West Side of the
North Operation Area Project
0 0.25 0.5 1 Miles
N
BLM
Ely District Office
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

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Rock Disposal Areas

As with the Proposed Action, waste rock material from the Numbers Pit Complex would be hauled to the existing North 1 RDA and would be reconfigured and reduced in footprint by approximately 362 acres in comparison to the Proposed Action. As a result of reconfiguration of the Numbers Pit Complex, the buffer zones of the North 4 RDA would be reduced by approximately 15 acres in comparison to the Proposed Action and would be reclaimed in 2015. The reconfiguration and reduction would maintain an undisturbed open space approximately 3,325 feet in width between the North 1 RDA and the BMM No. 1 HLF as a designated west side mule deer migration corridor (**Figure 2.5-2**).

As a result of the Numbers Pit Complex reconfiguration, the existing/authorized North 2, North 3, North 5 RDAs would be eliminated (**Figure 2.5-2**). The surface disturbance decrease of approximately 329 acres is detailed as follows:

- The North 2 RDA would be eliminated due to the additional capacity resulting from the reconfiguration of existing/authorized North 1 RDA and the Numbers Pit Complex carbonate-rich backfill area.
- The North 3 RDA would be eliminated due to the completion of mining and reclamation at the LJR 2 Pit.
- The North 5 RDA would be eliminated to maintain an undisturbed designated mule deer migration corridor between the existing/authorized RBM North RDA and the reconfigured Numbers Pit Complex that ranges from approximately 1,925-foot-wide at its narrowest point to 3,796-foot-wide at its widest point between the two facilities. This west side designated mule deer migration corridor then extends easterly towards the South Water Canyon RDA, and then south-west between the Redbird and Rat Pits. This reconfiguration would result in a reduction of approximately 141 acres.
- The existing/authorized North 4 RDA would be reclaimed in 2015. The reclamation of the North 4 RDA, coupled with several authorized facilities that would not be built in the same area, allows for deer migration directly from/to the north/south in addition to deer migration movement through the designated west side mule deer corridor.

Table 2.5-7 provides the disturbance acreages for RDAs within the Numbers Area. In addition the North 1 RDA has been modified from the Proposed Action to have an incremental capacity of 34 MT. The Reconfiguration Alternative column is compared to the Proposed Action disturbance column and includes additional, reduction, or zero acreage depending on whether the facility will be expanded, an authorized disturbance reduction, or the disturbance is equivalent to the Proposed Action, respectively. As compared to the Proposed Action, if the facility is not going to be built, then the acreages are shown in parentheses. Reclaimed facility acreage is shown as zero and number of acreages reclaimed.

Ore Processing Facilities

No further modifications to ore processing facilities beyond those detailed in the Proposed Action within the Numbers Area would be implemented.

Interpit Areas, Haul Roads, and Access Roads

The North 2, 3, and 5 RDAs would not be constructed; and the North 1 RDA surface disturbance would be reduced in size from the existing/authorized footprint, thus eliminating much of the interpit area. The authorized haul road connecting the Redbird area to the North 5 RDA would be eliminated, resulting in a surface disturbance decrease of approximately 16 acres in comparison to the Proposed Action. In 2015, the LJ Ridge haul road that extends from the north east side of the Redbird Pit to the 2015 reclaimed LJR 1 Pit would be reclaimed to a road suitable for light vehicle traffic which would involve lowering the berms consistent with MSHA regulations. During the first half of 2014, the berms were lowered on the LJ Ridge haul road at two shallow topographic crossing areas.

Table 2.5-7 Reconfiguration Alternative – Rock Disposal Area Design Parameters within the Numbers Area

Modified or Eliminated Rock Disposal Area	Proposed Action Surface Disturbance (acres)[1]	Reconfiguration Alternative Surface Disturbance (acres)[2]	
		Proposed Surface Disturbance	Withdrawn Authorized Disturbance[3]
North 1[4]	0	2	-372
North 2	0	0	-90
North 3	0	0	-97
North 4	0	0	-4
North 5	0	0	-141
Total	**0**	**2**	**-705**

[1] Corresponds to the Proposed Action Surface Disturbance acreages as presented in the middle column of **Table 2.4-1.**

[2] As compared to the Proposed Action Surface Disturbance, a zero indicates the Reconfiguration Alternative acreage is equal to the Proposed Action acreage. If the Reconfiguration Alternative acreage is expanded beyond the Proposed Action, the value is represented by a whole number.

[3] Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the Reconfiguration Alternative.

[4] The North 1 RDA includes the collective footprint of the existing and authorized 1/5 RDA, 2/3 RDA, and North 1 RDA.

Source: Barrick 2015, 2014a, 2012a,c.

Ancillary and Support Facilities

GMSs would be reconfigured or consumed in support of the reconfigurations or reclamation of facilities within the proposed Numbers Area. Where possible, GMSs would be located within interpit areas or on top of RDAs. Alternately, GMSs would be located at the base of proposed RDAs or other suitable areas. In either instance, GMSs would not be placed within the designated mule deer migration corridor, adjacent to haul road cut berms, or on the edge of RDAs immediately adjacent to the corridor. All other ancillary and support facilities would remain consistent with those described under the Proposed Action.

Water Management

Water management including pit dewatering and storm water management within the Numbers Area would remain consistent with those described under the Proposed Action.

Redbird and Rat Areas

The following section outlines the development, reconfiguration, and/or expansion of each facility located within the Redbird and Rat areas within the proposed NOA project. **Figures 2.5-1** and **2.5-2** illustrate the following alternative facility reconfigurations within the proposed Redbird and Rat areas.

Facility development would include sequencing and involve no mining of the Numbers 15 and Redbird pits concurrently. Mining would be completed in the Numbers 10 pit by 2015.

Open Pits

No modification to the Redbird open pit is anticipated beyond those detailed in the Proposed Action. For sequencing purposes, the Redbird Pit will not be mined concurrently with the Numbers 15 pit. The existing Rat Pit would not be expanded to its authorized disturbance acreage. The Rat Pit's disturbance would be reduced to its existing footprint resulting in a disturbance acreage reduction of 51 acres.

For mule deer purposes, Barrick BMM, would notify BLM and NDOW 4 months before commencing stripping of the Redbird Pit.

Rock Disposal Areas

To minimize disturbance between the Redbird RDA and Rat Pit, the existing/authorized Rat West RDA was eliminated from further expansion plans, recontoured, and reseeded in 2013. This action retained a west side designated mule deer migration corridor ranging from approximately 3,795-foot-wide at its narrowest point to approximately 7,284-foot-wide between the Redbird RDA and the Rat Pit, including ancillary and interpit disturbance areas. Approximately 1,415 feet of the designated corridor width includes the reshaped, recontoured, and revegetated Rat West RDA. Waste rock from the Rat Pit would instead be transferred to the Rat East RDA until reclaimed in 2015 or to the Redbird Pit for carbonate-rich backfill, if required (**Figure 2.5-2**).

The RBM North RDA would be recontoured and reseeded prior to the construction of the Redbird RDA which contributes to supporting mule deer migration through west side mule deer designated corridor.

Redbird RDA – Concurrent Reclamation Zone

Additional measures would be taken to facilitate mule deer passage during construction of the Redbird RDA. A concurrent reclamation zone would be developed as depicted in **Figure 2.5-2** and described as follows. The first two lifts of the north-northeast portion of the Redbird RDA would be recontoured and reseeded to a 3H:1V slope concurrent with operations when the lifts are established. This concurrent reclamation zone would include establishment of a bench that is a minimum of 10 feet wide on the recontoured slope. The bench would be constructed for the purpose of facilitating and encouraging deer passage and would include ramps to natural ground surface. The bench design slightly reduces the capacity of the Redbird RDA. To the extent the haul road from the Redbird Pit to the Redbird RDA passes through the concurrent reclamation zone, the slope below the haul road would be recontoured at a 3H:1V slope from the edge of the haul road to the toe of the RDA. Recontouring activities would not occur within the concurrent reclamation zone during the mule deer migration periods (November 30 to January 5 and March 15 to April 30). Each year, upon a request by Barrick, NDOW or BLM, a meeting would be held to review progress of the Redbird RDA construction, and discuss the status of build-out progress and/or reclamation timing within the concurrent reclamation zone in relation to the deer migration periods.

The existing Rat East RDA would be reclaimed in 2015. Reclamation of the existing Rat West RDA was completed in 2013.

Table 2.5-8 provides a summary of the eliminated and proposed RDA disturbance acreages within the proposed Redbird and Rat areas. In addition the Redbird RDA has been modified from the Proposed Action to have an incremental capacity of 378 MT.

Ore Processing Facilities

No existing ore processing facilities are located, nor are proposed ore processing facilities anticipated within the proposed Redbird and Rat areas.

Table 2.5-8 Reconfiguration Alternative – Rock Disposal Area Design Parameters within the Redbird and Rat Areas

Modified Rock Disposal Area	Proposed Action Disturbance (acres)[1]	Reconfiguration Alternative Surface Disturbance (acres)[2]	
		Proposed Surface Disturbance	Withdrawn Authorized Disturbance[3]
Redbird	457	457	0
Rat West	23	0	-228
Rat East	39	0	-60
RBM North	5	0	-8
RBM South	0	0	0
Total	**523**	**457**	**-296**

[1] Corresponds to the Proposed Action Surface Disturbance acreages as presented in the middle column of **Table 2.4-1**.

[2] As compared to the Proposed Action Surface Disturbance, a zero indicates the Reconfiguration Alternative acreage is equal to the Proposed Action acreage. If the Reconfiguration Alternative acreage is expanded beyond the Proposed Action, the value is represented by a whole number.

[3] Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the Reconfiguration Alternative.

Source: Barrick 2015, 2014a, 2012a,c.

Interpit Areas, Haul Roads, and Access Roads

Due to the elimination of the North 5 RDA, the haul road connecting the Redbird Area to the North 5 RDA would be eliminated, resulting in a surface disturbance decrease of approximately 16 acres in comparison to the Proposed Action. The haul road on the east side of the Redbird Pit to the LJR 1 Pit (approximately 60 acres of disturbance) is inactive and would be closed and reclaimed to a road suitable for light vehicle traffic concurrently with the Numbers and LJR facilities in 2015. These actions would retain a designated mule deer migration corridor width that varies from approximately 3,795 feet to 5,186 feet located between the Redbird Pit and the Numbers Pit.

Berm cuts would be installed along the haul road between the Redbird Pit and the Administration complex (**Figure 2.5-2**), so as to meet MSHA requirements and maximize the options for mule deer passage. Berm cut widths also would be maximized, to the extent possible. Haul road berm openings would be matched on each side of the road, so as to allow for mule deer passage to the extent possible while maintaining MSHA safety requirements. Breaks in the Redbird RDA ramp berms would be keyed to the bench referred to in the RDA section above.

Berms along the Rat haul road between the Redbird RDA and Rat West RDA would be lowered to the extent possible per MSHA standards to facilitate mule deer passage and heavy vehicle access to this road would be restricted by mid-2015. This haul road segment may be returned to haul road usage if necessary for future transport of GMSs, and haulage would not occur during the November 30 to January 5 and March 15 to April 30 mule deer migration time periods. This haul road segment would be returned to light road berms when it is no longer needed for haulage.

The East Haul Road associated with the Rat East RDA would both be reclaimed in 2015.

Ancillary and Support Facilities

GMS and ancillary disturbances would be eliminated in support of the facility reconfigurations within the proposed Redbird and Rat areas. Where possible, GMSs would be located within interpit areas or on top of RDAs. Alternately, GMSs would be located at the base of proposed RDAs or other suitable areas. In either instance, GMSs would not be placed within the designated mule deer migration corridor, adjacent to haul road cut berms, or on the edge of RDAs immediately adjacent to the corridor. The proposed 9-acre GMS that abuts the northwest portion of the Redbird RDA would be relocated to abut the south-west of the Redbird RDA, which allows for an enlarged undisturbed area for mule deer passage. All other ancillary and support facilities would remain consistent with those described under the Proposed Action.

Water Management

No modification to the Redbird open pit is anticipated beyond those detailed in the Proposed Action, Dewatering of the Redbird pit would be identical to the Proposed Action, ranging from approximately 133 gpm during the first year of dewatering and then declining to between 80 gpm and 41 gpm during the subsequent years.

Water management including pit dewatering and storm water management within the proposed Redbird and Rat areas would remain consistent with those described under the Proposed Action.

<u>Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon Areas</u>

The following section outlines the development, reconfiguration, existing/authorized acreage footprint reduction, and/or expansion of each facility located within the proposed Poker Flats, Duke, Top Pit Complex, existing/authorized East Sage, and South Water Canyon areas within the Reconfiguration Alternative NOA project. The Poker Flats, Duke, and Top Pit Complex disturbances are identical to the Proposed Action and the East Sage RDA has been reconfigured allowing for a designated mule deer migration corridor on the east side of the NOA. The South Water Canyon RDA will not be expanding to its authorized footprint to allow for an increase in undisturbed area for mule deer use. Each of these facilities is illustrated in **Figures 2.5-1**, **2.5-3**, and **2.5-4**.

To ensure designated mule deer corridors are retained for the eastern extent of the proposed NOA, the Poker Flats, Duke, and East Sage areas would be developed using a phased approach. The Poker Flats Pit would be developed during Phase I; the Duke Pit and associated ancillary and support facilities would be developed during Phase II; thus allowing for a designated mule deer corridor that allows for the facilitation of mule deer migration on the east side of the NOA.

Open Pits

To maintain a wider mule deer migration corridor between the Poker Flats, Duke, and East Sage areas, a two-phase development approach would be implemented. **Figure 2.5-3** illustrates the Phase I construction that would include:

- Phase I construction would include the development of the Poker Flats Pit and an undisturbed designated mule deer migration corridor that is approximately 790 feet wide at its narrowest point and 2,845 feet wide at its widest point between Poker Flats Pit and the East Sage RDA;
- A 3,745-foot-wide undisturbed designated mule deer migration corridor would be maintained between the Poker Flats RDA and the South Poker Flats HLF during Phase I. **Figure 2.5-4** illustrates that during Phase II construction, the designated mule deer migration corridor of approximately 4,450 feet at its narrowest point would be maintained between the Poker Flats Pit and Duke Pit. The location of the designated mule deer migration corridor between the Poker Flats Pit and East Sage RDA identified in Phase I would remain consistent during the development of Phase II. The South Duke Pit as described for the Proposed Action would not be

developed under the Reconfiguration Alternative allowing for an increase of 123 acres of undisturbed area for mule deer use.

Rock Disposal Areas

Phase I construction would include the reconfiguration of the Poker Flats RDA to facilitate the use of an undisturbed designated mule deer migration corridor ranging from 3,745 feet in width at its narrowest point between the Poker Flats RDA and the South Poker Flats HLF. The alternative Poker Flats RDA footprint would increase by approximately 58 acres in comparison to the Proposed Action to accommodate the waste rock from the Poker Flats Pit.

To facilitate mule deer migration through the east side of the NOA, the following sequence of facility construction and concurrent reclamation has been developed:

<u>Pre-Phase I</u>

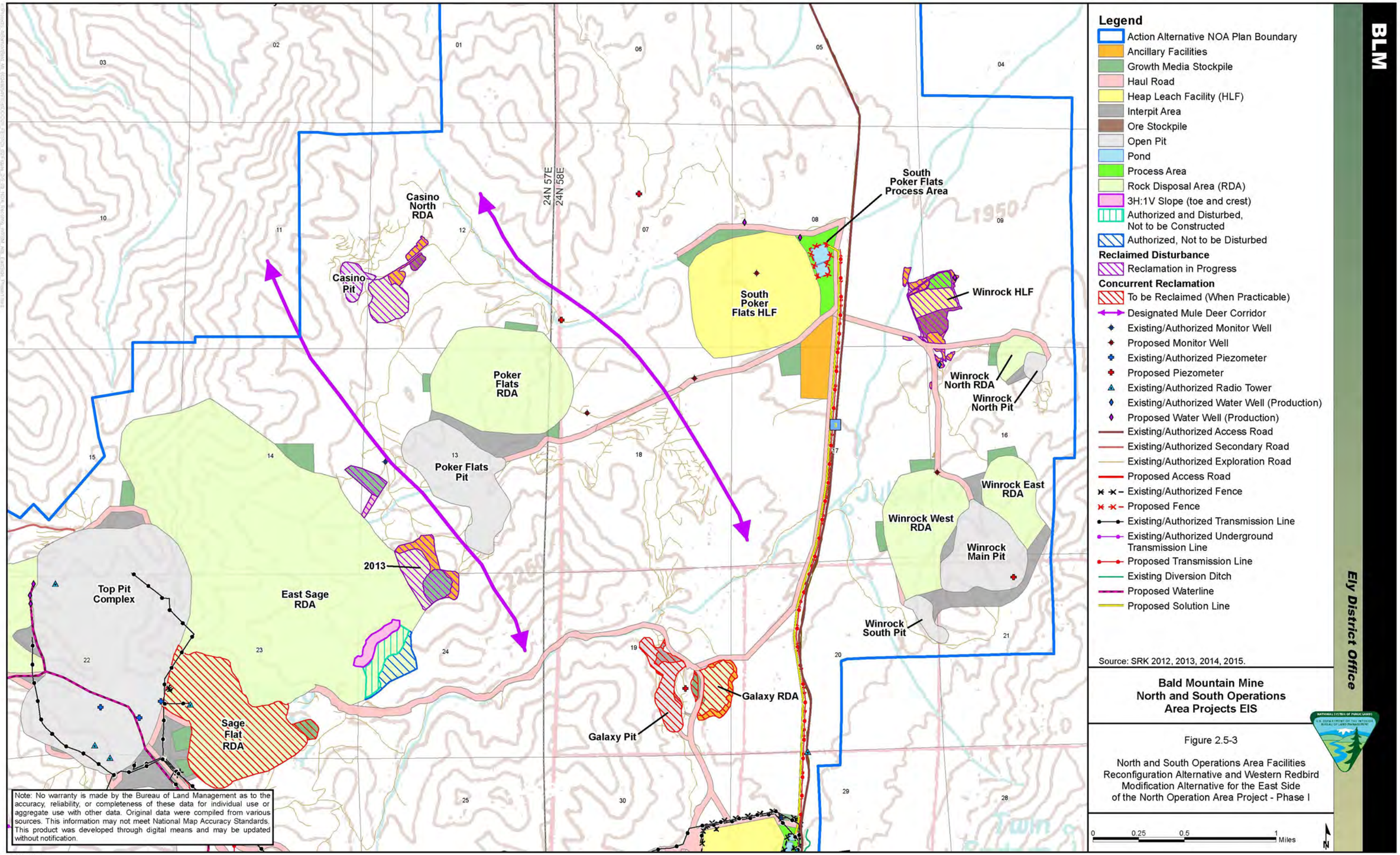
- Prior to construction of the Poker Flats Pit (Phase I), the toe of the reconfigured East Sage RDA and the existing grubbed area (i.e., ancillary disturbance) would be resloped, covered with growth media, and seeded. Reclamation for this area within the mule deer migration corridor was completed in 2013 (**Figure 2.5-3**). As a result, a designated mule deer migration corridor would range from 790 feet wide at its narrowest point, to approximately 2,845 feet at its widest point between these two features. This designated mule deer migration corridor consists of 75 percent undisturbed and natural topography and vegetation and 25 percent reclaimed areas between the Poker Flats Pit and the toe of the reclaimed East Sage RDA (**Figure 2.5-3**).
- Resloping, growth media application, and seeding of the toe of the East Sage RDA, located within the proposed mule deer corridor between the East Sage RDA and Poker Flats Pit would be completed prior to the beginning of construction of the Poker Flats Pit. A GMS and the haul road extending approximately 750 feet from the East Sage RDA northwest to the GMS would remain within the aforementioned mule deer migration corridor, but would be reclaimed as soon as practicable.

<u>Phase I</u>

- Phase I construction would include the development of the Poker Flats RDA. An undisturbed 3,745-foot-wide mule deer migration corridor would be maintained between the Poker Flats RDA and South Poker Flats HLF during Phase I (**Figure 2.5-3**).
- The designated mule deer migration corridors established during pre-Phase I on the west side of the Poker Flats Pit would be maintained for the entirety of Phase I.

<u>Pre-Phase II</u>

- The Poker Flats RDA would be recontoured and reseeded, and allowed to revegetate for two growing seasons prior to the commencement of Phase II development. A revegetation growing season is defined as the period from March 16 to July 15. An extension of natural landforms would be created with the utilization of existing topography when recontouring the Poker Flats RDA. The slopes would be contoured to shallower than 2.5H:1V, and undulations and non-linear features would be incorporated into these contoured slopes. Reclamation seed mixtures designed to take advantage of slope, aspect, and mule deer preference would be applied.


Legend
Action Alternative NOA Plan Boundary
Ancillary Facilities
Growth Media Stockpile
Haul Road
Heap Leach Facility (HLF)
Interpit Area
Ore Stockpile
Open Pit
Pond
Process Area
Rock Disposal Area (RDA)
3H:1V Slope (toe and crest)
Authorized and Disturbed, Not to be Constructed
Authorized, Not to be Disturbed
Reclaimed Disturbance
Reclamation in Progress
Concurrent Reclamation
To be Reclaimed (When Practicable)
Designated Mule Deer Corridor
Existing/Authorized Monitor Well
Proposed Monitor Well
Existing/Authorized Piezometer
Proposed Piezometer
Existing/Authorized Radio Tower
Existing/Authorized Water Well (Production)
Proposed Water Well (Production)
Existing/Authorized Access Road
Existing/Authorized Secondary Road
Existing/Authorized Exploration Road
Proposed Access Road
Existing/Authorized Fence
Proposed Fence
Existing/Authorized Transmission Line
Existing/Authorized Underground Transmission Line
Proposed Transmission Line
Existing Diversion Ditch
Proposed Waterline
Proposed Solution Line
Source: SRK 2012, 2013, 2014, 2015.
Bald Mountain Mine
North and South Operations
Area Projects EIS
Figure 2.5-3
North and South Operations Area Facilities Reconfiguration Alternative and Western Redbird Modification Alternative for the East Side of the North Operation Area Project - Phase I
0 0.25 0.5 1 Miles
N
BLM
Ely District Office
Casino North RDA
Casino Pit
24N 57E
24N 58E
South Poker Flats Process Area
South Poker Flats HLF
Winrock HLF
Winrock North RDA
Winrock North Pit
Poker Flats RDA
Poker Flats Pit
Winrock East RDA
Winrock West RDA
Winrock Main Pit
2013
Top Pit Complex
East Sage RDA
Winrock South Pit
Galaxy RDA
Galaxy Pit
Sage Flat RDA
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

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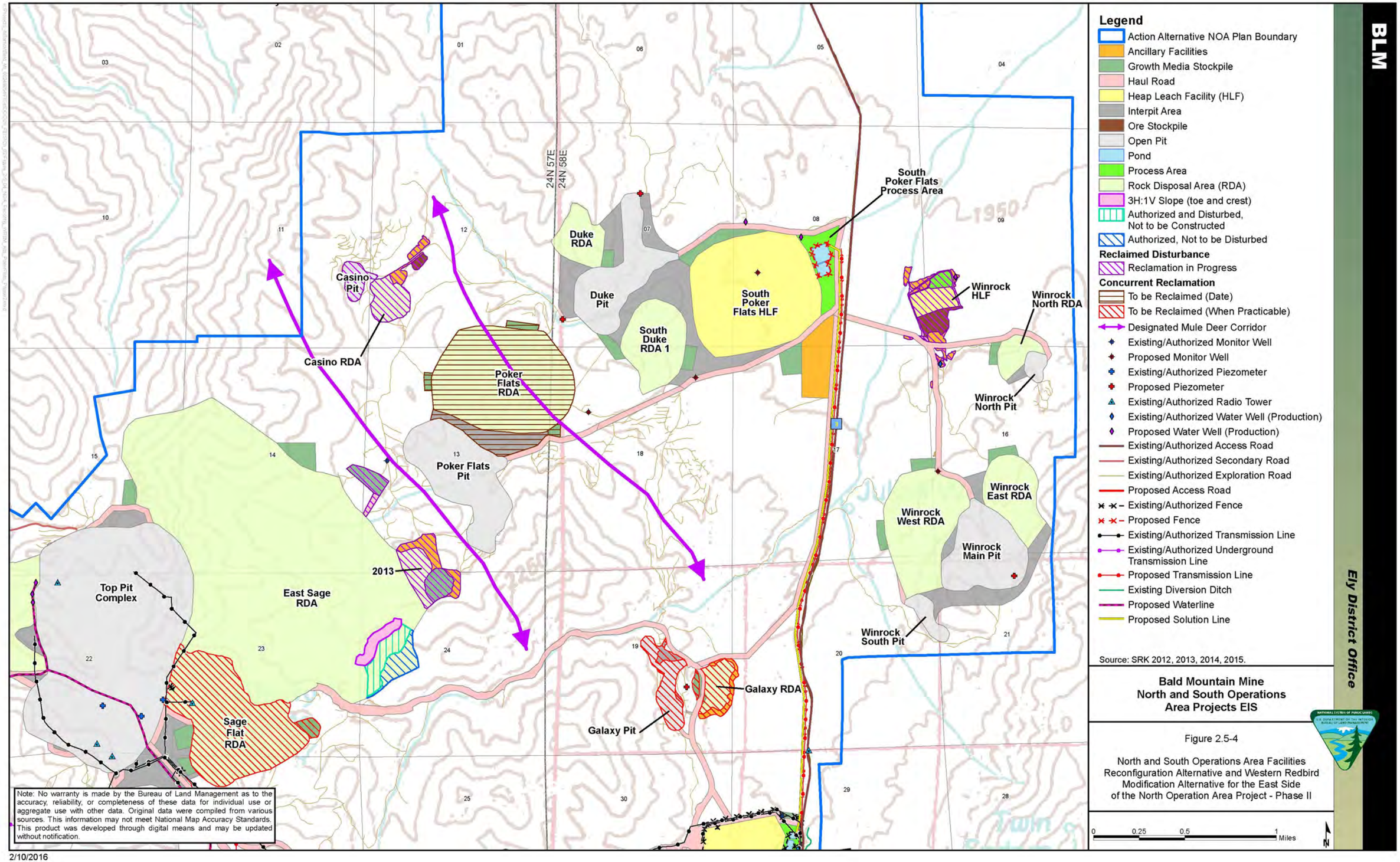
Legend
Action Alternative NOA Plan Boundary
Ancillary Facilities
Growth Media Stockpile
Haul Road
Heap Leach Facility (HLF)
Interpit Area
Ore Stockpile
Open Pit
Pond
Process Area
Rock Disposal Area (RDA)
3H:1V Slope (toe and crest)
Authorized and Disturbed, Not to be Constructed
Authorized, Not to be Disturbed
Reclaimed Disturbance
Reclamation in Progress
Concurrent Reclamation
To be Reclaimed (Date)
To be Reclaimed (When Practicable)
Designated Mule Deer Corridor
Existing/Authorized Monitor Well
Proposed Monitor Well
Existing/Authorized Piezometer
Proposed Piezometer
Existing/Authorized Radio Tower
Existing/Authorized Water Well (Production)
Proposed Water Well (Production)
Existing/Authorized Access Road
Existing/Authorized Secondary Road
Existing/Authorized Exploration Road
Proposed Access Road
Existing/Authorized Fence
Proposed Fence
Existing/Authorized Transmission Line
Existing/Authorized Underground Transmission Line
Proposed Transmission Line
Existing Diversion Ditch
Proposed Waterline
Proposed Solution Line
Source: SRK 2012, 2013, 2014, 2015.
Bald Mountain Mine
North and South Operations
Area Projects EIS
Figure 2.5-4
North and South Operations Area Facilities Reconfiguration Alternative and Western Redbird Modification Alternative for the East Side of the North Operation Area Project - Phase II
0 0.25 0.5 1 Miles
N
BLM
Ely District Office
24N 57E
24N 58E
South Poker Flats Process Area
Duke RDA
Duke Pit
South Duke RDA 1
South Poker Flats HLF
Winrock HLF
Winrock North RDA
Winrock North Pit
Casino Pit
Casino RDA
Poker Flats RDA
Poker Flats Pit
Winrock East RDA
Winrock West RDA
Winrock Main Pit
Winrock South Pit
2013
Top Pit Complex
East Sage RDA
Sage Flat RDA
Galaxy RDA
Galaxy Pit
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

2/10/2016

- The development and implementation of a monitoring effort of the Poker Flats RDA would be established in year 1 and would include maintaining precipitation records and at the end of the growing season, conducting an annual observation and status assessment of the reclaimed area to evaluate vegetation growth based on dryness of the year. To evaluate the revegetation effort after the two growing seasons, a general effectiveness and progress assessment of the revegetated Poker Flats RDA would occur. Based on the assessments, practical adaptive strategies may be imparted to adjust to the needs of the revegetation effort. If the general effectiveness and progress assessment reveals vegetative growth that remains largely suppressed, then after the third year, the development and implementation of remedial actions would take place. Adaptive and remedial actions include any one or a combination of the following: applying soil amendments, preserving soil structure, alleviating soil compaction, surface roughening, mulching, erosion control, reseeding, and utilizing a combination of reseeding methods.

Phase II

- After two growing seasons of re-vegetated areas at the Poker Flats RDA, Phase II construction would be initiated.
- During Phase II, the designated mule deer migration corridor ranging from approximately 790 to 2,000 feet wide would be retained between the Poker Flats Pit and the toe of the East Sage RDA. A designated mule deer migration corridor ranging from approximately 1,050 feet at its narrowest point to 2,675 feet at its widest point would be retained between the recontoured and reseeded Poker Flats Pit/RDA and Duke facilities (**Figure 2.5-4**).

Table 2.5-9 provides a summary of the reconfigured RDAs within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas. Note that the South Water Canyon RDA would not be expanded beyond existing conditions as previously authorized and the South Duke RDA 2 would not be constructed under the Reconfiguration Alternative. In addition the East Sage and Poker Flats RDAs have been modified from the Proposed Action to have an incremental capacity of 907 and 71 MT, respectively.

Ore Processing Facilities

Phase I construction would include the development of the South Poker Flats HLF. Allowing for a 3,745-foot-wide mule deer migration corridor would be maintained between the Poker Flats RDA and the South Poker Flats HLF per Phase I development (**Figure 2.5-3**). After two revegetation growing seasons at the Poker Flats RDA, Phase II construction of the Duke facilities would be initiated. As a result of the development of the Duke facilities, the previously existing 3,745-foot-wide mule deer migration corridor between the Poker Flats Pit and the Duke facilities would be reduced to an undisturbed corridor ranging from 730-foot-wide to 2,675-foot-wide and an undisturbed and reclaimed mule deer migration corridor ranging from 4,345-foot-wide to 4,450-foot-wide (**Figure 2.5-4**). Under the Reconfiguration Alternative, the North Poker Flats HLF and the North Poker Flats Process area would not be constructed as proposed for the Proposed Action.

Interpit Areas, Haul Roads, and Access Roads

The South Duke interpit areas would not be developed under the Reconfiguration Alternative as described for the Proposed Action. The haul road from Poker Flats Pit to the South Poker Flats HLF area would be converted to a light vehicle road during Phase 1 reclamation. The location and configuration of interpit areas would be modified to support the alternative facility designs within the Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas (**Figures 2.5-1** and **2.5-4**).

Table 2.5-9 Reconfiguration Alternative – Rock Disposal Area Design Parameters within the Poker Flats, Duke, Top Pit Complex, and East Sage Areas

Modified or Eliminated Rock Disposal Area	Proposed Action Surface Disturbance (acres)[1]	Reconfiguration Alternative Surface Disturbance[2] (acres)	
		Proposed Surface Disturbance[3]	Withdrawn Authorized Disturbance[4]
Casino North RDA	55	0	0
Casino South RDA	41	0	0
East Sage	30	304	-60
Poker Flats	179	237	0
Royale North RDA	150	0	0
Royal South RDA	84	0	0
South Duke RDA 2	73	0	0
South Water Canyon RDA	0	0	-136
Total	**612**	**541**	**-196**

[1] Corresponds to the Proposed Action Surface Disturbance acreages as presented in the middle column of **Table 2.4-1**.

[2] A zero indicates that no surface disturbance would be created under the Reconfiguration Alternative.

[3] Acreage values are estimated total disturbance.

[4] Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the Reconfiguration Alternative.

Source: Barrick 2015, 2014a, 2012a,c.

Ancillary and Support Facilities

GMSs would be reconfigured in support of the East Sage, Poker Flats, and South Duke RDAs. Where possible, GMSs would be located within interpit areas or on top of RDAs. Alternately, GMSs would be located at the base of proposed RDAs or other suitable areas. In either instance, GMSs would not be placed within the identified mule deer corridor, adjacent to haul road cut berms, or on the edge of RDAs immediately adjacent to the corridor. The South Duke and North Poker Flats GMSs would not be developed as described for the Proposed Action. All other ancillary and support facilities would remain consistent with those described under the Proposed Action.

Water Management

Proposed water management including pit dewatering and storm water management within the proposed Poker Flats, Duke, Top Pit Complex, and East Sage areas would remain consistent with those described under the Proposed Action.

Winrock Area

The following section outlines the development, reconfiguration, and/or expansion within the proposed Winrock area under the Reconfiguration Alternative. This section describes only that development that would differ from that detailed in the Proposed Action. **Figure 2.5-1** illustrates the following alternative facility reconfigurations within the proposed Winrock area.

Open Pits

No modifications to open pits are anticipated beyond those detailed in the Proposed Action within the Winrock area.

Rock Disposal Areas

No modifications to RDAs are anticipated beyond those detailed in the Proposed Action within the Winrock area.

Ore Processing Facilities

Under the Reconfiguration Alternative, the reclaimed Winrock heap leach facility would not be expanded from its existing footprint of 48 acres. This represents a decrease in surface disturbance of 93 acres from the Proposed Action. Under the Reconfiguration Alternative, the Winrock ore processing areas would not be constructed. This represents a surface disturbance decrease of 30 acres in comparison to the Proposed Action. Ore recovered from the Winrock pit area would be hauled across the existing county road to the proposed South Poker Flats heap leach facility or to the Mooney HLF.

Interpit Areas, Haul Roads, and Access Roads

No modifications to interpit areas, haul roads, and access roads are anticipated beyond those detailed in the Proposed Action within the Winrock area.

Ancillary and Support Facilities

No modifications to ancillary and support facilities are anticipated beyond those detailed in the Proposed Action within the Winrock area.

Water Management

Proposed water management within the proposed Winrock Area would remain consistent with those described under the Proposed Action. No pit dewatering is anticipated within the proposed Winrock Area.

<u>Little Bald Mountain Area</u>

Open Pits

Under the Reconfiguration Alternative, the LBM pit area would not be expanded from its existing footprint. This represents a surface disturbance decrease of 38 acres in comparison to the Proposed Action.

Rock Disposal Areas

Under the Reconfiguration Alternative, the LBM RDAs would not be expanded from its existing footprint. This represents a surface disturbance decrease of 54 acres in comparison to the Proposed Action.

Ore Processing Facilities

Under the Reconfiguration Alternative, the LBM ore processing and heap leach facility areas would be expanded from the existing footprints similar to the Proposed Action. The heap leach facility would expand to 238 acres and accommodate approximately 84 MT of material with a height of up to 250 feet. The LBM HLF would accommodate leach material from the Top Pit Complex and the reclaimed leach material at the existing, reclaimed and released LBM HLF. New process ponds, carbon columns, and support facilities would be constructed adjacent to the proposed LBM HLF. The conceptual pond design parameters would be the same as described in **Table 2.4-25** for the Proposed Action.

Interpit Areas, Haul Roads, and Access Roads

The 19 acres of interpit area, which is part of existing authorizations, would not be required for the Reconfiguration Alternative. No development of a new interpit area would be required. The acreage for the interpit area under the Proposed Action is 17 acres. This represents a surface disturbance decrease of 17 acres in comparison to the Proposed Action.

The continued use of existing/authorized haul roads within the LBM area would occur under the Reconfiguration Alternative. The existing road to the LBM pit would not be widened for haul road use; it is currently 35 feet wide and occupies 3 acres. To access the proposed process area, a new haul road would be constructed on the east side of the LBM HLF totaling 55 acres of surface disturbance as described for the Proposed Action. The proposed Mahogany Flats haul road extending from the northeast portion of the proposed LBM HLF towards the Mooney Basin and Galaxy Area as described for the Proposed Action would not be constructed under the Reconfiguration Alternative. This represents a surface disturbance decrease of 29 acres in comparison to the Proposed Action.

Communication Sites

Existing LBM communications sites, Towers A, B, C, and D, which have been authorized under a BLM ROW, would be included in the proposed NOA boundary.

Ancillary and Support Facilities

Under the Reconfiguration Alternative, growth media stockpiles, borrow pits, transmission lines and substations, water supply, fences, ancillary areas and yards, and buildings would be the same as described for the Proposed Action in Section 2.4.1.7, Little Bald Mountain Area.

Water Management

Proposed water management within the proposed LBM Area would remain consistent with those described under the Proposed Action. No pit dewatering is anticipated within the proposed LBM Area.

Royale Area

Under the Reconfiguration Alternative, the Royale Pit and associated RDAs, interpit areas, ancillary facilities, GMSs, haul roads, and access roads would not be constructed resulting in a surface disturbance decrease of 327 acres in comparison to the Proposed Action. No expansion of mining activities would occur in the Royale area.

Casino Area

Open Pits

Under the Reconfiguration Alternative, the Casino pit area would not be expanded from its existing footprint. This represents a surface disturbance decrease of 84 acres in comparison to the Proposed Action.

Rock Disposal Areas

Under the Reconfiguration Alternative, the Casino North RDA would not be constructed. This represents a surface disturbance decrease of 55 acres in comparison to the Proposed Action. Under the Reconfiguration Alternative, the Casino South RDA would not be expanded from its existing footprint. This represents a surface disturbance decrease of 41 acres in comparison to the Proposed Action.

Mooney Basin and Galaxy Areas

No modification and/or expansion of facilities are anticipated beyond those detailed in the Proposed Action within the Mooney Basin and Galaxy areas.

2.5.1.2 South Operations Area Project

Figure 2.5-5 illustrates the proposed life-of-mine (full build-out) for the proposed SOA project under the Reconfiguration Alternative. **Table 2.5-10** compares the surface disturbance acreages within the SOA between the Proposed Action and the Reconfiguration Alternative. No changes to the SOA PoO boundary are anticipated.

Table 2.5-10 Reconfiguration Alternative – Life-of-Mine Surface Disturbance Comparison for the South Operations Area

Project Component	Proposed Action Life-of-Mine Surface Disturbance (acres)[1,2]	Reconfiguration Alternative Life-of-Mine Surface Disturbance (acres)[1]		Difference (acres/ percent)[1]
		Proposed Surface Disturbance	Withdrawn Authorized Disturbance[6]	
Open Pits	347	321	0	-26 / -7
Rock Disposal Areas	1,241	1,199	0	-42 / -3
Heap Leach Facilities[3]	383	171	0	-212 / -55
Support Facilities[4]	679	633	0	-46 / -7
Exploration[5]	90	90	0	0
Total	**2,740**	**2,414**		**-326 / -12**

[1] Acreage values were determined from GIS data for the SOA project components only. Acreage values may vary due to rounding.

[2] Refer to **Table 2.4-2** for detailed acreages by project component.

[3] Heap leach facilities include heap leach facilities, tailing impoundments, and process areas.

[4] Support facilities include haul roads, interpit areas, secondary/exploration roads and pads, well access roads, maintenance/administrative facilities, silt pits, interpit, GMSs, monitoring wells, communication sites, transmission line corridors, and other ancillary disturbances. Support facility acreage includes 6 acres of facilities for which locations are not yet known. These acreages are not included in the GIS.

[5] The location of exploration acreage is not defined and is therefore not included GIS files and is not shown in figures. These acres are included the impact analysis contained in Chapter 3.0.

[6] Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the Reconfiguration Alternative.

Source: Barrick 2015, 2014a, 2012b.

Land Ownership and Mining Claims

Surface ownership and mining claims within the proposed SOA would remain consistent with those presented in Section 2.4.2.1, Land Ownership and Mining Claims.

Schedule and Work Force

The SOA project would commence as early as year 2, pending permit approvals. Construction-related activities would commence in mine year 2 and continue through year 4. Operation-related activities would commence in mine year 3 and continue through year 12. Leach material processing would continue for approximately 3 years after mining operations cease. Reclamation would begin in mine year 1 and would be conducted through year 18. Closure would begin in year 3 and occur through year 38. Reclamation monitoring would be conducted for a minimum of 3 years for each reclaimed area or until revegetation stability has been achieved. Closure and post-closure fluid monitoring would

continue for a minimum of 5 years for each closed component. **Tables 2.5-11** and **2.5-12** illustrate the proposed project timeline; and conceptual schedule for reclamation, closure, and post-closure monitoring activities under the Reconfiguration Alternative for the proposed SOA project, respectively.

Under the Reconfiguration Alternative, no changes to the SOA work force are anticipated. Work force estimations within the proposed SOA would remain consistent with those presented in Section 2.4.2.2, Proposed Schedule and Work Force.

Vantage and Luxe Areas

The following section outlines the development, reconfiguration, and/or expansion of each facility located within the proposed Vantage and Luxe areas within the proposed SOA project under the Reconfiguration Alternative. **Figure 2.5-5** illustrates the following alternative facility reconfigurations within the proposed Vantage and Luxe areas.

Open Pits

No modifications to open pits are anticipated beyond those detailed in the Proposed Action within Vantage or Luxe areas; however, changes to material handling in these areas would occur to support the alternative objectives as follows:

- Leach material from the Vantage Pit would be hauled to the Vantage HLF; and
- Leach material from the Gator Pit would be hauled to the Vantage HLF.

Under the Proposed Action leach material would be hauled to either the Vantage HLF or Gator HLF from both the Vantage Pit and Gator Pit.

Rock Disposal Areas

No modifications to rock disposal areas are anticipated beyond those detailed in the Proposed Action within the Vantage and Luxe areas.

Ore Processing Facilities

Existing/authorized and proposed HLFs within the proposed Vantage and Luxe areas would be modified to minimize disturbance to greater sage-grouse leks and associated General, Priority, and Other habitat. The proposed Gator HLF and associated process facilities would not be constructed, which would result in the removal of approximately 274 acres of disturbance in comparison to the Proposed Action. To accommodate the heap leach material from the Vantage, Luxe, and Gator pits, the proposed Vantage HLF would be expanded to the east and south by approximately 37 acres in comparison to the Proposed Action.

Table 2.5-11 North and South Operations Area Facilities Reconfiguration Alternative – Project Timeline for the South Operations Area Project[1]

Operational Activity	Years															
	1	2	3	4	5	6	7	8	9	10	11	12	13 to 18	19 to 21	26 to 38	39 to 68
Construction																
Operation																
Reclamation																
Closure[2]																
Reclamation Monitoring																
Post-Closure Monitoring[3]																

[1] This schedule is conceptual and subject to changes due to mining sequences that may affect the overall plan.

[2] Closure consists of fluid management and reduction at heap leach facilities.

[3] Post-closure monitoring would be conducted for at least 5 years and could continue up to 30 years following completion of heap leach processing based on current NDEP regulations. The duration of the BLM's post-closure monitoring would depend on the project's final closure plan and its implementation.

Source: Barrick 2014c.

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Table 2.5-12 North and South Operations Area Facilities Reconfiguration Alternative – Conceptual Reclamation Schedule for the South Operations Area Project[1]

Component	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045 to 2053	2054 to 2084
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30 to 38	39 to 68
Reclamation																															
Open Pit Closure[2]																															
Pit Safety Berm Reclamation																															
Rock Disposal Area Reclamation																															
Heap Leach Facility Earthwork																															
Process Ponds Reclamation																															
Haul Roads, Access Roads, Ancillary Facilities (Non-structure related) Reclamation																															
Structure Demolition and Reclamation																															
Processing Facility Site Reclamation																															
Well Abandonment																															
Exploration																															
Closure[3]																															
Interim Fluid Management																															
Fluid Inventory Reduction - Recirculation and Active Evaporation																															
Fluid Inventory Reduction - ET Cells																															
Monitoring																															
Reclamation Monitoring																															
Post-Closure Monitoring																															

[1] This schedule is conceptual and subject to changes due to mining sequences that may affect the overall plan.

[2] Reclamation is not ongoing during this period; however, may be initiated at any time within the period.

[3] Closure consists of fluid management and reduction at heap leach facilities.

Note: Timing of RDA reclamation is dependent on timing of Open Pit closure (for example: RDA reclamation year 6 correlates to Open Pit closure year 4).

Source: Barrick 2014c.

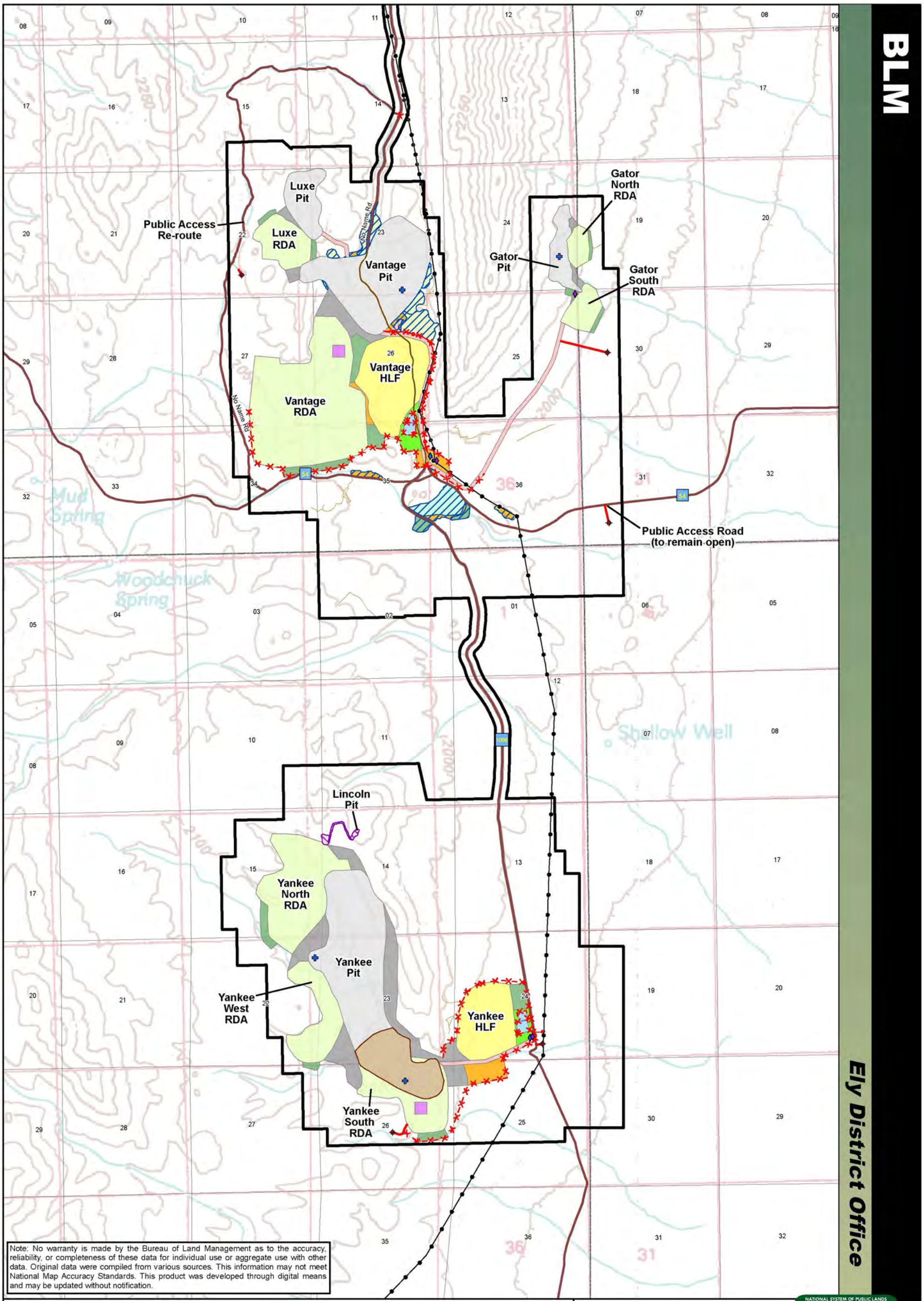

BLM
Ely District Office
Luxe Pit
Luxe RDA
Public Access Re-route
No Name Rd
Vantage Pit
Vantage HLF
Vantage RDA
Gator North RDA
Gator Pit
Gator South RDA
Public Access Road (to remain open)
Mud Spring
Woodchuck Spring
Shallow Well
Lincoln Pit
Yankee North RDA
Yankee Pit
Yankee West RDA
Yankee HLF
Yankee South RDA
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.
Legend
Proposed SOA Plan Boundary
Ancillary Facilities
Growth Media Stockpile
Haul Road
Heap Leach Facility (HLF)
Interpit Area
Class III Landfill
Open Pit
Pond
Process Area
Rock Disposal Area (RDA)
Tailings
Yankee Pit Backfill Area
Reclaimed Disturbance
Reclamation Complete
Reclamation in Progress
Proposed Monitor Well
Existing/Authorized Piezometer
Existing/Authorized Water Well (Production)
Proposed Water Well (Production)
Existing/Authorized Access Road
Existing/Authorized Exploration Road
Proposed Access Road
Proposed Fence
Existing/Authorized Transmission Line
Proposed Transmission Line
Source: SRK 2012, 2013, 2015.
3/7/2016
Bald Mountain Mine
North and South Operations
Area Projects EIS
Figure 2.5-5
North and South Operations Area Facilities Reconfiguration Alternative and Western Redbird Modification Alternative (Life-of-Mine) for the South Operations Area Project
0 0.25 0.5 1 Miles
N

Table 2.5-13 provides a summary of the modified and eliminated HLFs within the proposed Vantage and Luxe areas.

Table 2.5-13 Reconfiguration Alternative – Heap Leach Facility Design Parameters within the Vantage and Luxe Areas

Heap Leach Facility	Proposed Action Surface Disturbance (acres)[1]	Reconfiguration Alternative Surface Disturbance (acres)[1]	Height (feet)[2]	Incremental Capacity (MT)[2]
Vantage	45	82	250	65.4
Gator	229	0	N/A	N/A
Total	**274**	**82**	**N/A**	**N/A**

[1] Calculation does not include tailing impoundment and process area acreages that are reflected in **Table 2.7-1**.

[2] The height and Incremental Capacity shown above reflects those design parameters associated with Reconfiguration Alternative.

Source: Barrick 2012b,d.

Interpit Areas, Haul Roads, and Access Roads

The existing/authorized and proposed interpit areas and haul roads within the proposed Vantage and Luxe areas would be modified, resulting in an increase of 3 acres of new disturbance in comparison to the Proposed Action.

Ancillary and Support Facilities

Ancillary and support facilities, such as GMSs, process solution and storm water/event ponds, ancillary disturbance, haul roads, and GMSs, would be reconfigured within the proposed Vantage Area in association with the elimination of the Gator HLF and the alternative configuration of the Vantage HLF. Where possible, GMSs would be located within interpit areas or on top of RDAs.

The proposed 3,760-foot-long transmission line, with a 24-foot corridor, extending from the existing Vantage substation to the Gator process area would not be constructed under this alternative, resulting in a total surface disturbance decrease of approximately 2 acres in comparison to the Proposed Action. In addition, the proposed Vantage substation at the Gator HLF would not be constructed.

Due to the reconfiguration of the Vantage HLF, the proposed 69-kV transmission line extending from the existing Vantage substation to the Vantage Pit would increase by approximately 255 feet (**Figure 2.5-5**). Under this alternative, a substation would be installed in the vicinity of the Vantage Process area, with approximately 455 feet of 69-kV transmission line extending into the Vantage Process Area. Modifications to the proposed transmission line infrastructure would result in a net increase of approximately 2 acres of transmission line corridor disturbance within the Vantage area in comparison to the Proposed Action.

Due to the elimination of the Gator Process Area and reconfiguration of the Yankee South RDA, the 8-foot-high wildlife exclusion fences surrounding the proposed process ponds and storm water/event ponds would be adjusted to match the proposed alternative configuration. Cumulatively, between the Alligator Ridge, Vantage, and Yankee areas, a net decrease of approximately 2,860 feet of proposed wildlife exclusion fence would be anticipated. In addition, approximately 575 feet of range fence would be eliminated as a result of the alternative Yankee South RDA configuration.

Changes to ancillary disturbance associated with the removal of the Gator HLF and expansion of the Vantage HLF would result in a net decrease of approximately 34 acres of ancillary disturbance in comparison to the Proposed Action.

Due to the elimination of the Gator process area, the Vantage process area would be reconfigured to support the single administration/warehouse/truck shop building, fuel and lubricant facilities, and ponds located within the proposed Vantage and Luxe areas.

Water Management

Proposed water management including pit dewatering and storm water management within the proposed Vantage and Luxe areas would remain consistent with those described under the Proposed Action.

Yankee Area

The following section outlines the development, reconfiguration, and/or expansion of each facility located within the proposed Yankee Area within the proposed SOA project. **Figure 2.5-5** illustrates the following alternative facility reconfigurations within the proposed Yankee Area.

Open Pits

No changes to open pit configurations are proposed within Yankee Area; however, changes to material handling in these areas would occur to support the alternative objectives as follows:

- A larger portion of the southern end of the Yankee Pit would be backfilled with carbonate-rich material to the original ground surface. Approximately 22.1 MT of carbonate-rich backfill, representing an increase of 12.5 MT, would be placed in the Yankee Pit. The modified Yankee Pit backfill area would form the base for a portion of the Yankee South RDA, resulting in a reduced footprint of 27 acres in comparison to the Proposed Action (**Figure 2.5-5**).

Rock Disposal Areas

The Yankee South RDA would be modified to minimize disturbance to greater sage-grouse leks and associated General, Priority, and Core habitat. The Yankee South RDA would be reconfigured and reduced in size by approximately 42 acres in comparison to the Proposed Action. As previously stated, the modified Yankee Pit backfill area would form the base for a portion of the Yankee South RDA, resulting in a reduced footprint between the Yankee South RDA and Yankee HLF.

Table 2.5-14 provides a summary of the modified and eliminated RDAs within the proposed Yankee Area.

Table 2.5-14 Reconfiguration Alternative – Rock Disposal Area Design Parameters within the Yankee Area

Rock Disposal Area	Proposed Action Surface Disturbance (acres)	Reconfiguration Alternative Surface Disturbance (acres)[1]	Height (feet)[2]	Incremental Capacity (MT)[2]	Source of Waste Rock Material
Yankee South	239	197	250	60.8	Yankee Pit
Total	**239**	**197**	**N/A**	**N/A**	**N/A**

[1] There are 99 acres of the proposed Yankee Pit that would be converted to the Yankee South RDA. The overlapping disturbance footprint between the proposed Yankee Pit and the Yankee South RDA is included within the Yankee South RDA.

[2] The height and Incremental Capacity shown above reflects those design parameters associated with Reconfiguration Alternative.

Source: Barrick 2012b,d.

Ore Processing Facilities

No modifications to proposed ore processing facilities are anticipated within the proposed Yankee Area.

Interpit Areas, Haul Roads, and Access Roads

The existing/authorized and proposed interpit areas and haul roads within the proposed Yankee Area would be modified, resulting in a less than 1-acre surface disturbance decrease in comparison to the Proposed Action. Specifically, the haul road and interpit area was modified to support the alternative Yankee South RDA configuration.

Ancillary and Support Facilities

Support facilities within the proposed Yankee Area, such as GMSs, would be reconfigured to support the alternative Yankee South RDA design. Where possible, GMSs would be located within interpit areas or on top of RDAs. Alternately, GMSs would be located at the base of proposed RDAs. In either instance, GMSs would not be placed within the identified mule deer corridor, adjacent to haul road cut berms, or on the edge of RDAs immediately adjacent to the corridor. Disturbed acres for alternative support facilities presented in **Table 2.5-1** reflect an increase for GMSs that may be required to accommodate existing topography and future reclamation activities.

Water Management

Proposed water management including pit dewatering and storm water management within the proposed Yankee Area would remain consistent with those described under the Proposed Action.

2.5.2 North and South Operations Area Western Redbird Modification Alternative

The WRM Alternative was developed to further address potential impacts to mule deer migration through the NOA. Barrick proposed the modifications to the Numbers and Redbird Area facilities during the preparing of the DEIS in order to address impacts to mule deer migrating through the western side of the NOA project. Under the WRM Alternative, all aspects would be identical to the Proposed Action with the exception of the modifications listed in **Table 2.5-15**. Furthermore, a Revised Waste Rock Management Plan (Tetra Tech 2016) was developed specifically for the WRM Alternative. The Revised Waste Rock Management Plan (Tetra Tech 2016) updates the Adaptive Waste Rock Management Plan (Barrick 2012a, b). Section 3.3.2.3, Western Redbird Modification Alternative within Section 3.3, Water Quality and Quantity, provides additional information on the Revised Waste Rock Management Plan.

There is an important distinction between the Proposed Action and WRM Alternative in how previously authorized disturbance is addressed. Under the WRM Alternative, some of the previously authorized disturbance would not be developed/disturbed and some of the existing disturbance would undergo concurrent reclamation. In these authorized areas, the disturbance would be confined to the existing disturbance, and there would be no expansion of disturbance. The amount of acreage reduction in authorized disturbance is presented where applicable. Several features that have been identified in the Proposed Action would not be built, and some features identified as proposed new disturbance would be reduced in capacity and footprint.

Table 2.5-15 Summary of Modifications to the Proposed Action under the WRM Alternative

Feature Name	Feature Type	Modification from the Proposed Action
North Operations Area		
BMM Ancillary	Ancillary Facility	Reduced footprint
LBM Ancillary	Ancillary Facility	Eliminated
Casino GMS	GMS	Reduced to existing footprint

Table 2.5-15 Summary of Modifications to the Proposed Action under the WRM Alternative

Feature Name	Feature Type	Modification from the Proposed Action
Numbers GMS	GMS	Reduced footprint
Poker Flats GMS	GMS	Reduced footprint
RBM GMS	GMS	Reduced to existing footprint
Redbird GMS	GMS	Reduced footprint
Royale GMS	GMS	Eliminated
South Water Canyon GMS	GMS	Reduced footprint
Winrock GMS	GMS	Reduced footprint
Casino Haul Road	Haul Road	Eliminated
LBM Haul Road	Haul Road	Reduced footprint
LJR Haul Road	Haul Road	Reclaimed in 2015 and travel restriction
Mahogany Canyon Haul Road	Haul Road	Eliminated
Numbers Haul Road	Haul Road	Reduced footprint and travel restriction
Rat Haul Road	Haul Road	Reduced footprint and travel restriction
Royal Haul Road	Haul Road	Eliminated
Sage Flats Haul Road	Haul Road	Reduced to existing footprint
Top Pit Haul Road	Haul Road	Reduced footprint
Winrock Haul Road	Haul Road	Reduced footprint
BMM 2/3 Heap	Heap Leach	Portion of authorized heap would remain undeveloped[1]
North Poker Flats Heap	Heap Leach	Eliminated
Winrock Heap	Heap Leach	Reduced to existing footprint
Casino Interpit	Interpit	Eliminated
LBM Interpit	Interpit	Eliminated
Poker Flats Interpit	Interpit	Reduced footprint
Redbird Interpit	Interpit	Reduced footprint
Rat Interpit	Interpit	Reduced to existing footprint
Numbers Interpit	Interpit	Reduced footprint
Royal Interpit	Interpit	Eliminated
Top Pit Interpit	Interpit	Reduced footprint
Office Area	Office Area	Reduced footprint
Casino Pit	Pit	Reduced to existing footprint
LBM Pit	Pit	Reduced to existing footprint
LJR 1 Pit	Pit	Reduced to existing footprint; no further mining
LJR 2 Pit	Pit	Reduced to existing footprint; no further mining
Numbers Pit Complex	Pit	Reduced to existing footprint; no further mining
Rat Pit	Pit	Reduced to existing footprint
RBM Pit	Pit	12 acres of authorized RBM Pit converted to Redbird Pit
Redbird Pit	Pit	Reduced footprint

Table 2.5-15 Summary of Modifications to the Proposed Action under the WRM Alternative

Feature Name	Feature Type	Modification from the Proposed Action
Royale Pit	Pit	Eliminated
South Duke Pit	Pit	Eliminated
LBM Communication Powerline	Powerline Corridor	Relocated
Winrock Powerline	Powerline Corridor	Eliminated
BMM No. 1 Process Area	Process Area	Reduced to existing footprint
LBM Process Area	Process Area	Eliminated
North Poker Flats Process Area	Process Area	Eliminated
Winrock Process Area	Process Area	Eliminated
Casino North RDA	RDA	Eliminated
Casino South RDA	RDA	Reduced to existing footprint
East Sage RDA	RDA	Increased footprint
Horseshoe RDA	RDA	Reduced to existing footprint
LBM RDA 1	RDA	Eliminated
LBM RDA 2	RDA	Eliminated
North 1 RDA	RDA	Reduced footprint
North 2 RDA	RDA	Eliminated
North 3 RDA	RDA	Eliminated
North 4 RDA	RDA	Reduced to existing footprint
North 5 RDA	RDA	Eliminated
Rat East RDA	RDA	Reduced to existing footprint
Rat West RDA	RDA	Reduced to existing footprint
Redbird RDA	RDA	Reduced footprint
RBM North RDA	RDA	Reduced to existing footprint
Royale North RDA	RDA	Eliminated
Royale South RDA	RDA	Eliminated
South Duke RDA 2	RDA	Eliminated
South Water Canyon RDA	RDA	Reduced to existing footprint
Winrock Waterline	Waterline Corridor	Eliminated
Snow Management Route	Snow Management Route	No new disturbance
South Operations Area		
Gator GMS	Ancillary Facility	Eliminated
Vantage Ancillary	Ancillary Facility	Increased footprint
Gator GMS	GMS	Eliminated
Vantage GMS	GMS	Reduced footprint
Yankee GMS	GMS	Increased footprint
Gator Powerline	Powerline Corridor	Eliminated
Vantage Powerline	Powerline Corridor	Increase of existing footprint
Gator Process Area	Process Area	Eliminated
Vantage Process Area	Process Area	Increased footprint
Yankee South RDA	RDA	Reduced footprint
Gator Heap	Heap Leach	Eliminated

Table 2.5-15 Summary of Modifications to the Proposed Action under the WRM Alternative

Feature Name	Feature Type	Modification from the Proposed Action
Vantage Heap	Heap Leach	Increased footprint

[1] An 11-acre portion of the BMM 2/3 heap would not be developed, although the area in the footprint has existing use.

Source: Barrick 2015.

Under the WRM Alternative the NOA PoO boundary area would increase by approximately 487 acres in comparison with the Proposed Action to form a NOA PoO boundary area of 31,572 total acres consisting of both disturbed and undisturbed areas. The PoO boundary expansion would be located on unpatented lode claims that are owned, leased, or controlled by Barrick on BLM-administered public lands as shown on **Figure 2.5-6**.

The WRM Alternative would eliminate 1,831 acres of disturbance from the Proposed Action and an additional 2,158 acres of previously authorized disturbance would not be constructed, representing a 3,989-acre (56 percent) reduction in comparison to the Proposed Action. The total proposed disturbance under the WRM Alternative would be 3,097 acres. **Table 2.5-16** summarizes the WRM Alternative surface disturbance in comparison to the Proposed Action.

Table 2.5-16 WRM Alternative – Surface Disturbance Comparison for the North and South Operations Area Projects

Project Component	Proposed Action Surface Disturbance (acres)[1,2]		WRM Alternative Disturbance (acres)[1]		Difference (acres/percent)[1]
	Proposed Surface Disturbance	Withdrawn Authorized Disturbance[5]	Proposed Surface Disturbance	Withdrawn Authorized Disturbance[5]	
Open Pits	1,210	0	780	-224	-654/-54
Rock Disposal Areas	2,787	0	2,345	-1,461	-1,903/-68
Heap Leach Facilities[3]	1,156	0	678	0	-478/-41
Support Facilities[4]	1,855	-11	1,373	-484	-955/-51
Exploration	90	0	90	0	0/0
Total	**7,097**	**-11**	**5,266**	**-2,169**	**-3,989/-56**

[1] Acreage values were determined from geographic information system (GIS) data that combined the NOA and SOA project components. Acreage values may vary due to rounding.

[2] Refer to **Table 2.4-1** for detailed acreages by project component.

[3] Heap leach facilities include heap leach facilities, tailing impoundments, and process areas.

[4] Support facilities include haul roads, interpit areas, secondary/exploration roads and pads, well access roads, maintenance/administrative facilities, silt pits, interpit, GMSs, monitoring wells, communication sites, transmission line corridors, and other ancillary disturbances. Support facility acreage includes 12 acres of facilities for which locations are not yet known. These acreages are not included in the GIS.

[5] Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the WRM Alternative.

Source: Barrick 2015.

Under the WRM Alternative, mine facilities proposed to be concurrently reclaimed are outlined in **Table 2.5-17**. Some features would be reclaimed by the end of a year and other features or portions of the same feature would be reclaimed without a specific timeframe but during mining operations. Note that **Table 2.5-17** only lists mine facilities that are proposed to be concurrently reclaimed under the WRM Alternative, and that some "non-concurrently reclaimed" features (e.g., Casino Pit) are not shown in this table but are evident in **Figure 2.5-6** and described as "reclamation in progress."

Table 2.5-17 Summary of Concurrent Reclamation

Component	Concurrent Reclamation (acres)[1]	Year
Banghart Pit	5	2015
LJR 1 Pit	38	2015
LJR 2 Pit	55	2015
Numbers Pit Complex	134	2015
Interpit (LJR & Numbers)	9	2015
North 1 RDA	150	2015
North 4 RDA	58	2015
Rat East RDA	127	2015
Haul Road (LJR & Rat)	54	2015
Sub-Total	**630**	**2015**
Poker Flats RDA	237	Phase 1
Poker Flats GMS	9	Phase 1
Poker Flats Interpit	32	Phase 1
Sub-Total	**278**	**Phase 1**
North 1 RDA	117	When Practicable
Numbers Pit	65	When Practicable
Numbers Haul Road	9	When Practicable
Interpit (LJR and Numbers)	41	When Practicable
RBM North RDA	115	When Practicable
RBM Ancillary	12	When Practicable
Redbird RDA	84	When Practicable
Rat Pit	68	When Practicable
Sage Flat RDA	214	When Practicable
Sage Flat GMS	6	When Practicable
Horseshoe Haul Road	19	When Practicable
Galaxy Pit	31	When Practicable
Galaxy Ancillary	8	When Practicable
Galaxy RDA	26	When Practicable

Table 2.5-17 Summary of Concurrent Reclamation

Component	Concurrent Reclamation (acres)[1]	Year
Interpit (Galaxy)	6	When Practicable
Sub-Total	**821**	When Practicable
Total	**1,729**	**Concurrent Reclamation**

[1] Concurrent reclamation includes contouring, growth media placement, seeding of applicable features, and monitoring. These features would not be released from BLM or NDEP reclamation obligations during the concurrent reclamation timeframe.

2.5.2.1 North Operations Area Project

Figure 2.5-6 illustrates the proposed life-of-mine (full build-out) for the proposed NOA project under the WRM Alternative. **Table 2.5-18** compares the surface disturbance acreages within the NOA between the Proposed Action and the WRM Alternative.

Table 2.5-18 WRM Alternative – Surface Disturbance Comparison for the North Operations Area

Project Component	Proposed Action Surface Disturbance (acres)[1,2]		WRM Alternative Surface Disturbance (acres)[1]		Difference (acres/percent)[1]
	Proposed Surface Disturbance	Withdrawn Authorized Disturbance[5]	Proposed Surface Disturbance	Withdrawn Authorized Disturbance[5]	
Open Pits	863	0	460	-224	-628/-73
Rock Disposal Areas	1,545	0	1,145	-1,461	-1,861/-120
Heap Leach[3]	773	0	507	0	-266/-34
Support Facilities[4]	1,176	-11	740	-484	-909/-77
Exploration	0	0	0	0	0/0
Total	**4,357**	**-11**	**2,852**	**-2,169**	**-3,662/-84**

[1] Acreage values were determined from GIS data for the NOA project components only. Acreage values may vary due to rounding.

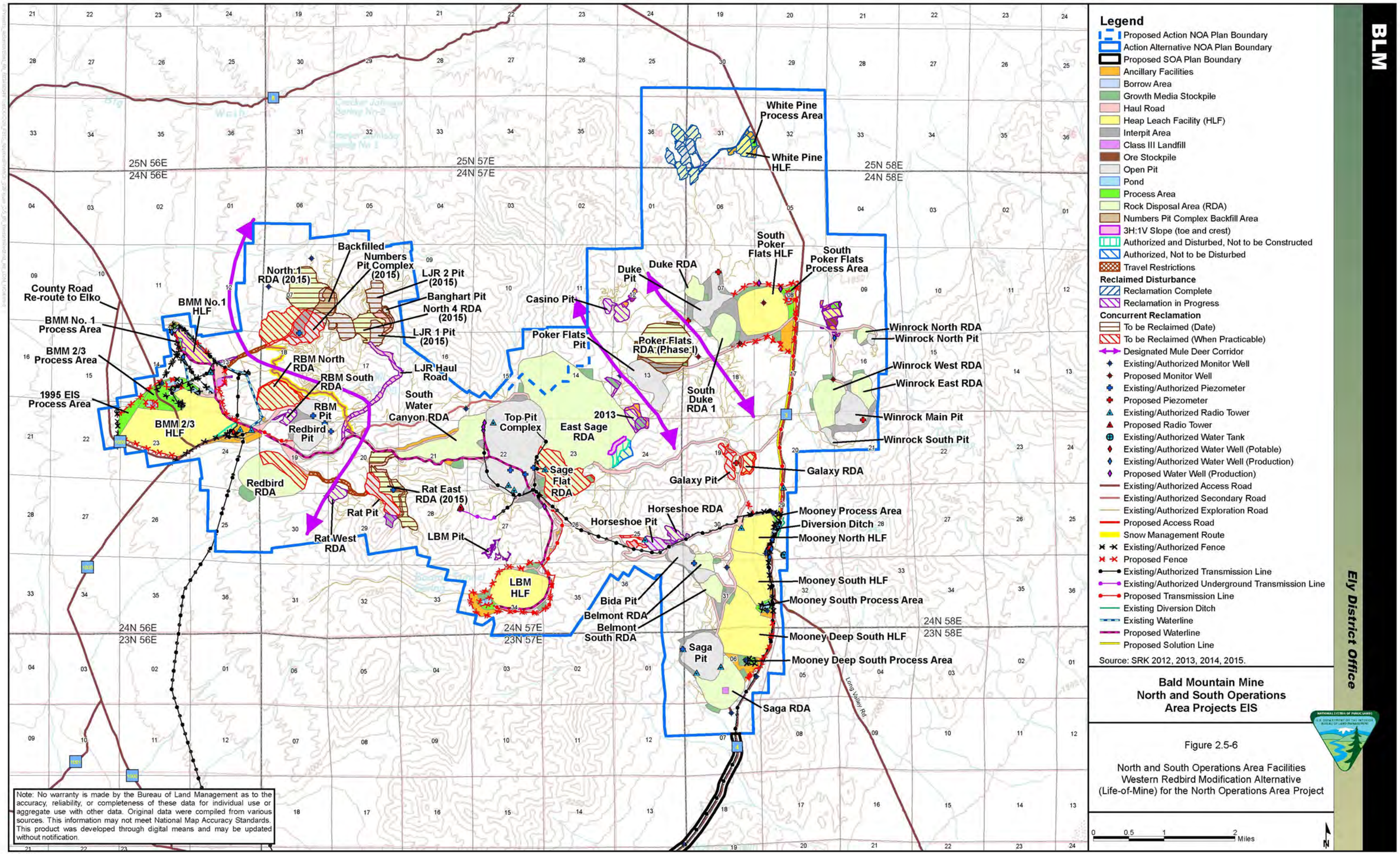
[2] Refer to **Table 2.4-1** for detailed acreages by project component.

[3] Heap leach facilities include heap leach facilities, tailing impoundments, and process areas.

[4] Support facilities include haul roads, interpit areas, secondary/exploration roads and pads, well access roads, maintenance/administrative facilities, silt pits, interpit, GMSs, monitoring wells, communication sites, transmission line corridors, and other ancillary disturbances. Support facility acreage includes 8 acres of facilities for which locations are not yet known. These acreages are not included in the GIS.

[5] Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the WRM Alternative.

In the NOA, there are both existing and to–be-built features that would be concurrently reclaimed during active mining operations. Concurrent reclamation consists of 1,729 acres in the NOA. **Table 2.5-17** provides a detailed list of the mine features and associated acreages slated for concurrent reclamation.


Legend
Proposed Action NOA Plan Boundary
Action Alternative NOA Plan Boundary
Proposed SOA Plan Boundary
Ancillary Facilities
Borrow Area
Growth Media Stockpile
Haul Road
Heap Leach Facility (HLF)
Interpit Area
Class III Landfill
Ore Stockpile
Open Pit
Pond
Process Area
Rock Disposal Area (RDA)
Numbers Pit Complex Backfill Area
3H:1V Slope (toe and crest)
Authorized and Disturbed, Not to be Constructed
Authorized, Not to be Disturbed
Travel Restrictions
Reclaimed Disturbance
Reclamation Complete
Reclamation in Progress
Concurrent Reclamation
To be Reclaimed (Date)
To be Reclaimed (When Practicable)
Designated Mule Deer Corridor
Existing/Authorized Monitor Well
Proposed Monitor Well
Existing/Authorized Piezometer
Proposed Piezometer
Existing/Authorized Radio Tower
Proposed Radio Tower
Existing/Authorized Water Tank
Existing/Authorized Water Well (Potable)
Existing/Authorized Water Well (Production)
Proposed Water Well (Production)
Existing/Authorized Access Road
Existing/Authorized Secondary Road
Existing/Authorized Exploration Road
Proposed Access Road
Snow Management Route
Existing/Authorized Fence
Proposed Fence
Existing/Authorized Transmission Line
Existing/Authorized Underground Transmission Line
Proposed Transmission Line
Existing Diversion Ditch
Existing Waterline
Proposed Waterline
Proposed Solution Line
Source: SRK 2012, 2013, 2014, 2015.
Bald Mountain Mine
North and South Operations
Area Projects EIS
Figure 2.5-6
North and South Operations Area Facilities
Western Redbird Modification Alternative
(Life-of-Mine) for the North Operations Area Project
0 0.5 1 2 Miles
N
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25N 56E
24N 56E
25N 57E
24N 57E
25N 58E
24N 58E
24N 56E
23N 56E
24N 57E
23N 57E
24N 58E
23N 58E
White Pine Process Area
White Pine HLF
South Poker Flats HLF
South Poker Flats Process Area
Duke Pit
Duke RDA
Casino Pit
Poker Flats Pit
Poker Flats RDA (Phase I)
South Duke RDA 1
Winrock North RDA
Winrock North Pit
Winrock West RDA
Winrock East RDA
Winrock Main Pit
Winrock South Pit
Galaxy RDA
Galaxy Pit
Backfilled Numbers Pit Complex (2015)
North 1 RDA (2015)
LJR 2 Pit (2015)
Banghart Pit
North 4 RDA (2015)
LJR 1 Pit (2015)
LJR Haul Road
County Road Re-route to Elko
BMM No.1 HLF
BMM No. 1 Process Area
BMM 2/3 Process Area
1995 EIS Process Area
BMM 2/3 HLF
RBM North RDA
RBM South RDA
RBM Pit
Redbird Pit
South Water Canyon RDA
Top Pit Complex
2013
East Sage RDA
Sage Flat RDA
Redbird RDA
Rat East RDA (2015)
Rat Pit
Rat West RDA
LBM Pit
LBM HLF
Horseshoe RDA
Horseshoe Pit
Mooney Process Area
Diversion Ditch
Mooney North HLF
Mooney South HLF
Mooney South Process Area
Bida Pit
Belmont RDA
Belmont South RDA
Mooney Deep South HLF
Mooney Deep South Process Area
Saga Pit
Saga RDA
Long Valley Rd
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

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Designated Mule Deer Migration Corridors

Multiple corridors designed to allow seasonal movement of mule deer through the NOA have been included under the WRM Alternative. **Figure 2.5-6** shows the locations of the three designated mule deer migration corridors in the NOA. These migration corridors would include undisturbed areas and areas of disturbance that have been concurrently reclaimed. Any reference to "undisturbed corridors" in relation to the three designated mule deer migration corridors means no large scale disturbance. Haul roads and exploration activities occur within "undisturbed corridors." **Table 2.5-19** presents the minimum distance of undisturbed corridor widths between active mine features and also illustrates the combined corridor widths of undisturbed and reclaimed portions of the designated mule deer migration corridors as part of the WRM Alternative.

Table 2.5-19 WRM Alternative – Summary of the Minimum Distance between Representative Bounding Disturbance Features Abutting Designated Mule Deer Migration Corridors

Bounding Disturbance Features	Minimum Distance of Undisturbed Lands (feet)	Minimum Total Distance of Undisturbed and Reclaimed Lands (feet)
Numbers Pit Complex to RBM North RDA	2,525	4,650
Numbers Pit Complex to RBM Pit	4,155	4,155
Redbird Pit to Rat Pit	4,190	4,190
Redbird Pit to Rat East RDA	3,740	4,225
Redbird RDA to Rat Pit	4,300	5,220
East Sage RDA to Poker Flats Pit	790	1,980
Poker Flats RDA to Duke Pit	730	4,450
Poker Flats Pit to South Duke RDA 1	2,675	4,345

To allow for an additional east side undisturbed mule deer corridor between the reclaimed toe of the East Sage RDA and the proposed Poker Flats pit, the PoO boundary would be expanded to the north to include an area of 487 acres in the vicinity of the Top Pit Complex due to the reconfiguration of the East Sage RDA . Additionally, phased development of Poker Flats area would occur allowing for a mule deer corridor between the Poker Flats Pit and the Duke Pit.

On the west side of the NOA, the designated mule deer migration corridor is comprised of both undisturbed and disturbed lands including open spaces with widths of up to 5,220 feet between the Redbird and Rat Areas as shown in **Table 2.5-19**. There are approximately 65 acres of concurrently reclaimed haul roads within the west side mule deer corridor. There are some operational haul roads located within the west side designated mule deer corridor that would have travel restrictions.

To facilitate mule deer migration on the west side of the NOA during severe winters, an existing road would be used as a snow management route. The snow management route is approximately 11,500 feet or 2.2 miles long located near the reclaimed North 1 RDA to the reclaimed LJR Haul Road located within the west side designated mule deer migration corridor (**Figure 2.5-7**).

Snowfall monitoring would take place during the fall and spring mule deer migrations. When the snow depth exceeds the threshold at which mule deer movement is compromised and forage becomes unavailable, Barrick would develop the proposed snow management route on the existing road using a bulldozer or other suitable equipment to compact the snow. The management threshold triggers such as snow depth, a measuring location, and monitoring would be developed in conjunction with the Wildlife Working Group.

Several existing and authorized mine components in the Numbers, Redbird, and East Sage Areas that abut or are within the designated mule deer corridors would be concurrently reclaimed, some within designated timeframes as shown in **Table 2.5-17**.

An existing/authorized disturbed area comprised of 11 acres on the east side of the BMM 2/3 Heap Leach Pad would not be constructed (**Figure 2.5-7**).

To further facilitate the migration of mule deer, the Redbird Pit and the Redbird RDA would be separated by approximately 1,170 feet. A portion of the slope of the Redbird RDA facing the Redbird Pit, or northeast, also would be reclaimed to an overall slope of 3H:1V. Some inter benches would be slightly steeper allowing for flat areas at the toe of the inter-bench. A section of haul road within this area between the Redbird Pit and Redbird RDA would be constructed at a 4H:1V cut/fill allowing for shallow slopes to access the berm cuts further facilitating mule deer migration in the area.

Additionally, the commitments outlined in mule deer monitoring plan, the mule deer design features and the applicant committed measures further enhance the facilitation of migrating mule deer through the NOA and SOA.

Greater Sage-grouse Habitat and Leks

The elimination of the proposed Casino, and Royale facilities and the modifications to the Numbers and Redbird areas from the WRM Alternative reduces disturbance to greater sage-grouse habitat. Elimination of the proposed Royale facilities also reduces noise at greater sage-grouse leks which are located outside of the PoO boundary (see **Table 2.5-15**). The areas would be concurrently reclaimed to establish sagebrush habitat for greater sage-grouse.

Visual Aesthetics

The removal of the Royale facilities and North Poker Flats HLF from the WRM Alternative substantially reduces the features that are visible to passersby north of the project area in the vicinity of the Pony Express National Historic Trail, Ruby Valley Pony Express Station, Fort Ruby National Historic Landmark, and the Ruby Lake NWR.

Hydrology

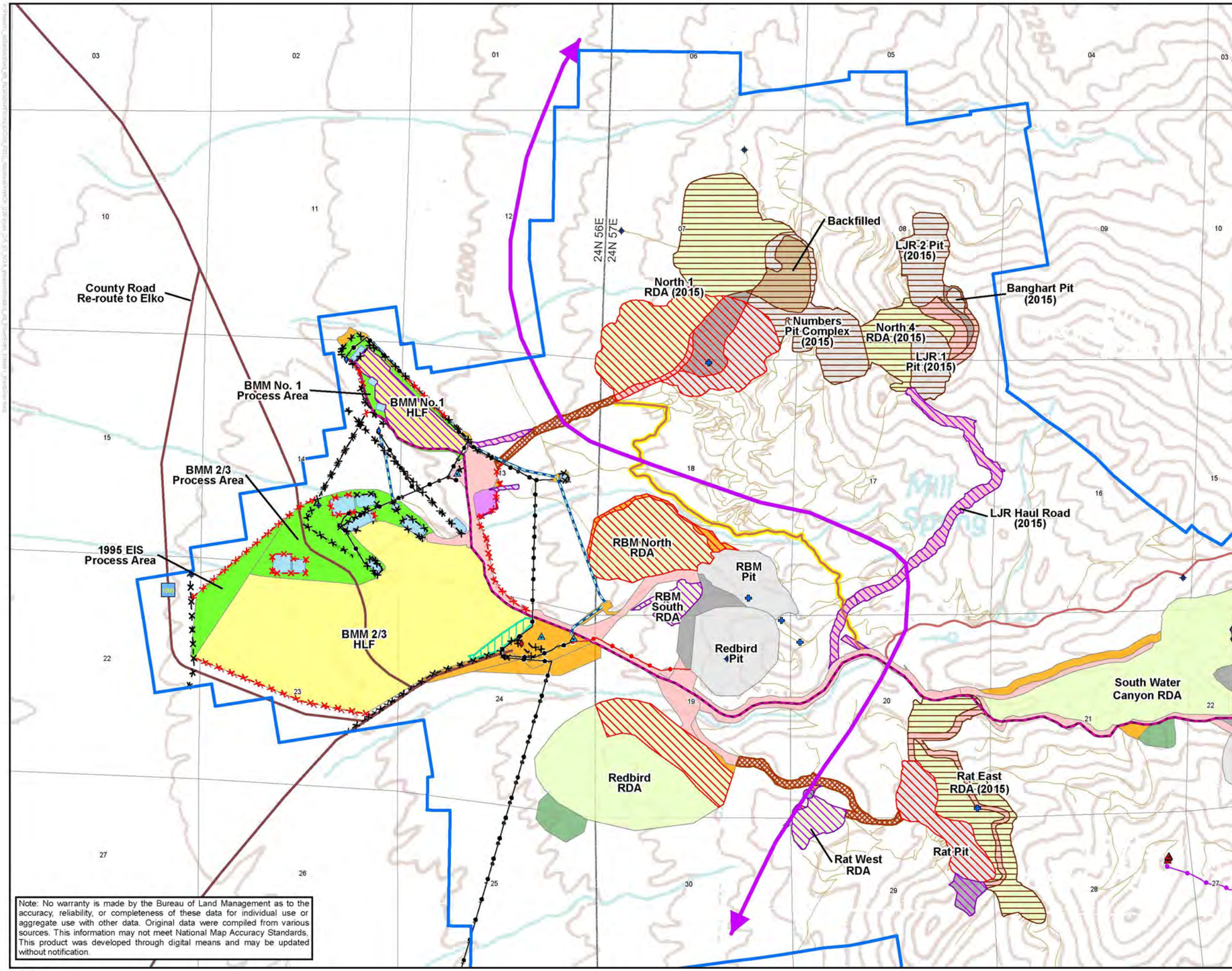
The WRM Alternative Redbird Pit bottom elevation would be shallower (6,620 feet amsl) than the pit bottom in the Proposed Action (6,020 feet amsl). No dewatering is proposed for the Redbird Pit under the WRM Alternative.

Land Ownership and Mining Claims

Surface ownership and mining claims within the proposed NOA would remain consistent with those presented in Section 2.4.1.1, Land Ownership and Mining Claims.

Schedule and Work Force

The NOA project would commence on the same schedule as the Proposed Action, beginning as early as year 1, pending permit approval, and have a construction and operational life of ten years which includes both proposed and existing/authorized mining activities. Construction- related activities would commence upon permit approval and continue through year 7. Operation-related activities such as mining and ore processing would commence in mine year 1 and continue through year 10. Leach material processing would continue for approximately 3 years after mining operations cease. Final reclamation activities including monitoring would begin the first year and would be conducted through year 25. Reclamation monitoring would be conducted for a minimum of 3 years for each reclaimed area or until revegetation stability has been achieved.



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

Legend

- Action Alternative NOA Plan Boundary
- Ancillary Facilities
- Borrow Area
- Growth Media Stockpile
- Haul Road
- Heap Leach Facility (HLF)
- Interpit Area
- Class III Landfill
- Open Pit
- Pond
- Process Area
- Rock Disposal Area (RDA)
- Numbers Pit Complex Backfill Area
- Authorized and Disturbed, Not to be Constructed
- Travel Restrictions

Reclaimed Disturbance

- Reclamation in Progress

Concurrent Reclamation

- To be Reclaimed (Date)
- To be Reclaimed (When Practicable)
- Designated Mule Deer Corridor
- Existing/Authorized Monitor Well
- Existing/Authorized Piezometer
- Existing/Authorized Radio Tower
- Proposed Radio Tower
- Existing/Authorized Water Well (Potable)
- Existing/Authorized Water Well (Production)
- Proposed Water Well (Production)
- Existing/Authorized Access Road
- Existing/Authorized Secondary Road
- Existing/Authorized Exploration Road
- Snow Management Route
- Existing/Authorized Fence
- Proposed Fence
- Existing/Authorized Transmission Line
- Existing/Authorized Underground Transmission Line
- Proposed Transmission Line
- Existing Waterline
- Proposed Waterline

Source: SRK 2012, 2013, 2014, 2015.

Bald Mountain Mine
North and South Operations
Area Projects EIS

Figure 2.5-7

North and South Operations Area Facilities
Western Redbird Modification Alternative
for the West Side of the
North Operation Area Project

0 0.25 0.5 1 Miles

N

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Table 2.5-20 North and South Operations Area Facilities WRM Alternative – Project Timeline for the North Operations Area Project[1]

Operational Activity (Project components closure and reclamation takes place during the operational mine life)	Years									
	1-4	5-7	8-10	11-13	14-17	18-21	22-25	26-28	29-35	36-58
Construction										
Operation										
Reclamation										
Closure[2]										
Reclamation Monitoring										
Post-Closure Monitoring[3]										

[1] This schedule is conceptual and subject to changes due to mining sequences that may affect the overall plan.

[2] Closure consists of fluid management and reduction at heap leach facilities.

[3] Post-closure monitoring would be conducted for at least five years, and could continue up to 30 years, following completion of heap leach processing based on current NDEP regulations. The duration of the BLM's post-closure monitoring would depend on the project's final closure plan and its implementation.

Source: Barrick 2015.

Post-closure fluid monitoring would continue for a minimum of 5 years for a maximum of 30 years per BMRR requirements for each closed component. This timeframe may vary dependent on the post reclamation responsibilities as outlined in the PoO. **Tables 2.5-20** and **2.5-21** illustrate the project timeline and conceptual schedule for reclamation, closure, and post-closure monitoring activities under the WRM Alternative for the proposed NOA project, respectively. Appendix B provides a detailed conceptual schedule illustration for reclamation, closure, and post closure monitoring activities for the proposed NOA project.

The NOA work force would be reduced in size in comparison to the Proposed Action. Work force estimations within the NOA for the WRM Alternative would vary from a maximum of 498 employees (368 full time employees/130 contractors) in 2017 to a minimum of 41 employees (36 full time employees/ 5 contractors) in year 2025.

Numbers Area

The following section outlines the concurrent reclamation, elimination, and/or reduction to existing and proposed disturbance of each facility located in the Numbers Area within the NOA project under the WRM Alternative.

Open Pits

Existing/authorized and proposed open pits within the western extent of the proposed NOA would be modified from the Proposed Action to facilitate a west side designated mule deer migration corridor as seen in **Table 2.5-15**. The designated corridor generally is undisturbed. Mining of the existing Numbers Pit Complex would be completed by 2015. Concurrent reclamation of portions of the Numbers Pit Complex would occur in 2015. The remaining portions of the Numbers Pit Complex also would be concurrently reclaimed as outlined in **Table 2.5-17**.

The LJR Pits 1 and 2 would not be mined beyond the existing footprint reducing the authorized footprint by 18 acres. Both pits would be reclaimed in 2015. The Banghart Pit also would undergo concurrent reclamation in 2015.

Rock Disposal Areas

With the completion of mining in the Numbers Pit Complex, the associated RDAs would be reclaimed. The reclamation of the North 4 RDA, coupled with several authorized facilities that would not be built in the same area, allows for the facilitation of deer migration directly from/to the north/south in addition to deer migration movement through the designated west side mule deer corridor.

The elimination of the North 5 RDA would result in an undisturbed designated mule deer migration corridor between the existing/authorized RBM North RDA and the Numbers Pit Complex that ranges from approximately 2,525-foot-wide at its narrowest point. This west side-designated mule deer migration corridor then extends easterly towards the South Water Canyon RDA, and then southwest between the Redbird RDA and Rat Pit allowing for an undisturbed mule deer migration corridor width of 4,300 feet. To further facilitate mule deer migration, the authorized but not constructed North 2 and North 3 RDAs also would be eliminated and the North 1 RDA authorized disturbance would be reduced. The surface disturbance decrease of approximately 777 acres is detailed as follows:

- Reclamation activities for the northern portion of the North 1 and North 4 RDAs would be completed in 2015.
- The North 2 RDA would be eliminated due to the reclamation of the Numbers Pit Complex.
- The North 3 RDA would be eliminated due to the completion of mining and reclamation at the LJR 2 Pit.
- The North 5 RDA would be eliminated.

Table 2.5-21 WRM Alternative - Conceptual Reclamation Schedule for the North Operations Area Project[1,2]

Component	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045 to 2050	2051 to 2074
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30 to 35**	**36 to 58**
Reclamation																															
Open Pit Closure																															
Pit Safety Berm Reclamation																															
Rock Disposal Area Reclamation																															
Heap Leach Facility Earthwork																															
Process Ponds Reclamation																															
Haul Roads, Access Roads, Ancillary Facilities (Non-structure related) Reclamation																															
Structure Demolition and Reclamation																															
Processing Facility Site Reclamation																															
Well Abandonment																															
Exploration																															
Closure[3]																															
Interim Fluid Management																															
Fluid Inventory Reduction - Recirculation and Active Evaporation																															
Fluid Inventory Reduction - ET Cells																															
Monitoring																															
Reclamation Monitoring																															
Post-Closure Monitoring																															

1 This schedule is conceptual and subject to changes due to mining sequences that may affect the overall plan.

2 The entirety of this conceptual reclamation schedule is based on reclamation activities for bonding purposes.

3 Closure consists of fluid management and reduction at heap leach facilities.

Source: Barrick 2015.

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The modifications including reclamation activities would maintain open space approximately 3,770 feet in width between the North 1 RDA and the BMM No. 1 HLF.

Table 2.5-22 provides the disturbance acreages for RDAs within the Numbers Area. The WRM Alternative column is compared to the Proposed Action disturbance column and includes additional, reduction, or zero acreage depending on whether the facility would be expanded, an authorized disturbance reduction, or the disturbance is equivalent to the Proposed Action, respectively. As compared to the Proposed Action, if the facility is not going to be built, then the acreages are shown in parentheses. Reclaimed facility acreage is shown as zero and number of acreages reclaimed.

Table 2.5-22 WRM Alternative – Rock Disposal Area Design Parameters within the Numbers Area

Modified or Eliminated Rock Disposal Area (Existing/Authorized)[1]	Proposed Action Surface Disturbance (acres)[2]	WRM Alternative Surface Disturbance (acres)[3]	
		Proposed Surface Disturbance	Withdrawn Authorized Disturbance[4]
North 1[5]	0	0	-444
North 2	0	0	-90
North 3	0	0	-97
North 4	0	0	-4
North 5	0	0	-141
Total	**0**	**0**	**-777**

[1] Corresponds to the No Action Alternative surface disturbance acreages presented in Table 2.3-1 in the Existing Authorized Surface Disturbance column.

[2] Corresponds to the Proposed Action Surface Disturbance acreages as presented in the middle column of **Table 2.4-1.**

[3] As compared to the Proposed Action Surface Disturbance, a zero indicates the WRM Alternative acreage is equal to the Proposed Action acreage. If the WRM Alternative acreage is expanded beyond the Proposed Action, the value is represented by a whole number.

[4] Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the WRM Alternative.

[5] The North 1 RDA includes the collective footprint of the existing and authorized 1/5 RDA, 2/3 RDA, and North 1 RDA.

Ore Processing Facilities

An approximate 11-acre area on the east side of the BMM 2/3 Heap Leach Pad (currently disturbed as the leach field area for the septic system) would not be used for an expansion of the BMM 2/3 Heap Leach Pad. No further modifications to ore processing facilities beyond those detailed in the Proposed Action within the Numbers Area would be implemented.

Interpit Areas, Haul Roads, and Access Roads

The existing interpit areas would be reclaimed as a result of no further mining in the Numbers Pit Complex. Interpit areas, haul roads, and access roads authorized for disturbance and not yet constructed would be eliminated in this alternative and include:

- The haul road connecting the proposed Redbird Area to the authorized but not constructed North 5 RDA.

- The existing upper section of the LJR haul road that extends near from the southern point of the proposed snow management route to the 2015 reclaimed LJR 1 Pit would be reclaimed to a road suitable for light vehicle traffic which would consistent lowering the berms consistent with MSHA regulations. The lower portion of the LJR haul road has been reclaimed.
- A travel restriction prohibiting haul truck traffic would be placed on the existing Numbers haul road.
- During severe winters, a snow management route to facilitate mule deer migration would be maintained on an existing road on the west side of the NOA. This route would follow existing roads and would be about 2.2 miles in length and would vary in width. Barrick would use a bulldozer or other appropriate tracked equipment to compact the snow to create a travel pathway suitable for mule deer migration.

Ancillary and Support Facilities

GMSs would be eliminated or consumed in support of the reclamation of facilities within the proposed Numbers Area.

Water Management

Water management activities within the Numbers Area would remain consistent with those described under the Proposed Action such as there would be no pit dewatering.

Redbird and Rat Areas

The following section outlines the development and/or modification including concurrent reclamation of each facility located within the Redbird and Rat areas. **Figure 2.5-7** illustrates the following alternative facility reconfigurations and concurrent reclamation within the proposed Redbird and Rat areas.

Open Pits

To minimize disturbance and increasing designated mule deer corridor widths, thus allowing for facilitation of mule deer migration, the Redbird Pit would be reduced in size compared with the Proposed Action.

The Redbird Pit would be modified and would be reduced by 104 acres compared to the Proposed Action. The RBM Pit would be reconfigured and 12 acres would become part of the Redbird Pit. The southwest portion of the RBM Pit would be reconfigured to interpit which decreases the pit by about 7 acres. Thus the RBM Pit would consist of 61 acres. Depending on economics, Barrick may elect to place waste rock in a portion of the existing RBM Pit. The design parameters for the reconfigured Redbird Pit are as seen in **Table 2.5-23**. **Table 2.5-24** presents a summary of the ore and waste rock tonnages that would be mined from the Redbird Pit under the WRM Alternative.

Table 2.5-23 Pit Design Parameters – Redbird Area

Open Pit	Slope (degrees)	Length (ft)	Width (ft)	Depth (ft)	Pit Bottom Elevation (ft amsl)
Redbird	40-60	2,400	2,500	760	6,620

Table 2.5-24 Summary of Ore and Waste Tonnages from the Redbird Pit[1]

Open Pit	Leach Material (MT)	Waste Rock Material (MT)	Total (MT)
Redbird	3	33	36

[1] Values have been rounded to the nearest whole integer.

The WRM Alternative Redbird Pit bottom elevation would be shallower (6,620 feet amsl) than the pit bottom in the Proposed Action (6,020 feet amsl). Once initiated, mining activities would be continuous and are expected to be completed within 18 months at the Redbird Pit. To support the facilitation of mule deer migration, Barrick would notify the BLM and NDOW 4 months before commencing stripping of the Redbird Pit and RDA.

To maximize the west side mule deer corridor width to 4,190 feet between the existing Rat Pit and the proposed Redbird pit, the Rat Pit would not be expanded to its authorized disturbance acreage which would be a reduction of 51 acres.

Rock Disposal Areas

To minimize disturbance between the Redbird RDA and Rat Pit, the existing/authorized Rat West RDA was eliminated from further expansion plans, and was recontoured, and reseeded in 2013. This action retained a west side designated mule deer migration corridor ranging from approximately 4,300 feet wide at its narrowest point to approximately 6,790 feet wide between the Redbird RDA and the Rat Pit, including ancillary and interpit disturbance areas. Approximately 1,380 feet of the designated corridor width includes the reshaped, recontoured, and revegetated Rat West RDA. The Rat East RDA would not be developed beyond its existing 127-acre disturbance and would undergo concurrent reclamation with completion in 2015.

The RBM North RDA would be recontoured and reseeded prior to the construction of the Redbird RDA which contributes to supporting mule deer migration through west side mule deer designated corridor. The existing RBM South RDA would be concurrently reclaimed once mining activity at Redbird area is completed.Redbird RDA – Concurrent Reclamation Zone

The Redbird RDA is approximately 1,170 feet from the southern edge of the Redbird Pit. The slope of the Redbird RDA facing the Redbird Pit would be reclaimed to an overall slope of 3H:1V; some of the inter-benches would be slightly steeper to allow for flat areas at the toe of the inter-bench to slow storm water runoff and reduce the potential for erosion. The existing disturbance of 127 acres of the Rat East RDA would be reclaimed in 2015. A section of haul road within this area between the Redbird Pit and Redbird RDA would be at a 4H:1V cut/fill allowing for shallow slopes to access the berm cuts further facilitating mule deer migration in the area.

Table 2.5-25 provides a summary of the eliminated and proposed RDA disturbance acreages within the proposed Redbird and existing Rat areas. In addition the Redbird RDA has been modified from the Proposed Action to reduce the capacity to 33 MT.

The proposed Redbird RDA would be constructed to accommodate waste rock from the proposed Redbird Pit. Based on the static test results for waste rock samples, the proposed Redbird Area contains waste rock with an average NNP of 11.8 kg/t and a neutralization potential ratio (NPR) of 2.0 as shown in **Table 2.5-26**. Monitoring of the RDA will occur and if there is (a) greater than 20 % PAG; or (b) between 10 % and 20 % PAG and the NNP value is less than 200 kg/t then specific measures would be employed as outlined in the Revised Waste Rock Mangement Plan (Tetra Tech 2016).

Table 2.5-25 WRM Alternative – Rock Disposal Area Design Parameters within the Redbird and Rat Areas

Modified Rock Disposal Area	Proposed Action Disturbance (acres)[1]	WRM Alternative Surface Disturbance (acres)[2]	
		Proposed Surface Disturbance	Withdrawn Authorized Disturbance[3]
Redbird	457	254	0
Rat West	23	0	-292
Rat East	39	0	-60
RBM North	5	0	-8
Total	523	254	-359

[1] Corresponds to the Proposed Action Surface Disturbance acreages as presented in the middle column of **Table 2.4-1**.

[2] As compared to the Proposed Action Surface Disturbance, a zero indicates the WRM Alternative acreage is equal to the Proposed Action acreage. If the WRM Alternative acreage is expanded beyond the Proposed Action, the value is represented by a whole number.

[3] Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the WRM Alternative.

Table 2.5-26 Summary of Redbird Pit Geochemistry[1]

Proposed Mine Area	Waste Rock Material (MT)	Average Acid Neutralizing Potential (ANP) (kg/t)	Average Acid Generating Potential (AGP) (kg/t)	Average Net Neutralizing Potential (NNP) (kg/t)	Neutralizing Potential Ratio (NPR)
Redbird	33	44.3	22.1	+22.2	2.0

[1] Values have been rounded to the nearest whole integer.

Ore Processing Facilities

No existing ore processing facilities are located, nor are proposed ore processing facilities anticipated within the proposed Redbird and existing Rat areas.

Interpit Areas, Haul Roads, and Access Roads

Due to the elimination of the North 5 RDA, the haul road connecting the Redbird Area to the North 5 RDA would be eliminated, resulting in a surface disturbance decrease of approximately 16 acres in comparison to the Proposed Action. The haul road on the east side of the proposed Redbird Pit to the LJR 1 Pit (approximately 62 acres of disturbance) is inactive, and the upper portion would be closed and reclaimed to a road suitable for light vehicle traffic in 2015. The lower portion of this haul road would have a travel restriction prohibiting haul truck use. These actions would retain a designated mule deer migration corridor width that varies from approximately 2,525 feet to 4,830 feet located between the Redbird Pit and the Numbers Complex.

A travel restriction would be placed on the portion of the existing haul road from the eastern edge of the Redbird RDA to the Rat Pit. This restriction would prohibit haul truck traffic except as needed for reclamation purposes.

Berm cuts would be installed along the haul road between the Redbird Pit and the Administration complex, so as to meet MSHA requirements and maximize the options for mule deer passage during migration. Berm cut widths also would be maximized, to the extent possible. Haul road berm openings would be matched on each side of the road, to allow for mule deer passage to the extent possible while maintaining MSHA safety requirements.

Berms along the Rat haul road between the Redbird RDA and Rat West RDA would be lowered to the extent possible per MSHA standards to facilitate mule deer passage and heavy vehicle access to this road would be restricted by mid-2015. This haul road segment may be returned to haul road usage if necessary for future transport of growth media, and haulage would not occur during the November 30 to January 5 and March 15 to April 30 mule deer migration time periods. This haul road segment would be returned to light road berms when it is no longer needed for haulage. The haul road associated with the Rat East RDA would be reclaimed in 2015.

A section of haul road between the Redbird Pit and Redbird RDA would be constructed at a 4H:1V cut/fill allowing for shallow slopes to access the berm cuts further facilitating mule deer migration in the area.

The interpit area located on the east side of the proposed Redbird Pit would be eliminated thus removing 71 acres.

The existing road located approximately 200 feet north of the Redbird Area would be maintained as a snow management route to facilitate mule deer migration during severe winters.

Ancillary and Support Facilities

GMS and ancillary disturbances would be eliminated in support of the facility reconfigurations within the proposed Redbird and Rat areas. Where possible, GMSs would be located within interpit areas or on top of RDAs. Alternately, GMSs would be located at the base of proposed RDAs or other suitable areas. In either instance, GMSs would not be placed within the designated mule deer migration corridor, adjacent to haul road cut berms, or on the edge of RDAs immediately adjacent to the corridor. The proposed 9-acre GMS that abuts the northwest portion of the Redbird RDA would be relocated to abut the southwest of the Redbird RDA for a single GMS totaling 22 acres; this allows for an enlarged undisturbed area for mule deer passage. The GMS locations that abut the Rat West RDA would be eliminated thus removing 24 acres, and the GMS that abuts the RBM North RDA would be eliminated thereby removing 17 acres. An existing GMS that abuts the Rat West RDA was reclaimed in 2013.

The existing Rat Pit would not be built out to its authorized footprint, thus eliminating approximately 44 acres of interpit area.

Transmission Lines and Substations

A transformer would be placed near the Redbird Pit to supply power to the electric shovels. The transformer would be located on existing/authorized disturbance.

Water Management

The proposed pit bottom of the Redbird Pit would not intersect the water table for the WRM Alternative; the pit bottom elevation of 6,620 feet would be shallower than the Redbird Pit under the Proposed Action. No dewatering activities would occur under this alternative. Stormwater runoff catchment areas would be reduced in size commensurate with the reduction in the footprint of the Redbird RDA and interpit area. Stormwater control measures would be the same as the Proposed Action.

Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon Areas

The following section outlines the development, modification, existing/authorized acreage footprint reduction, and/or expansion of each facility located within the proposed Poker Flats, Duke, Top Pit Complex, existing/authorized East Sage, and South Water Canyon areas within the WRM Alternative NOA project. The Poker Flats, Duke, and Top Pit Complex pit disturbances are identical to the Proposed Action and the East Sage RDA has been modified allowing for a designated mule deer migration corridor on the east side of the NOA. The South Water Canyon RDA would not be expanded to its authorized footprint to allow for an increase in undisturbed area for mule deer use. Each of these facilities is illustrated in **Figures 2.5-1, 2.5-3,** and **2.5-4**.

To ensure designated mule deer corridors are retained for the eastern extent of the proposed NOA, the Poker Flats, Duke, and East Sage areas would be developed using a phased approach. The Poker Flats Pit would be developed during Phase I; the Duke Pit and associated ancillary and support facilities would be developed during Phase II; thus allowing for a designated mule deer corridor that allows for the facilitation of mule deer migration on the east side of the NOA.

Open Pits

To maintain a wider mule deer migration corridor between the Poker Flats, Duke, and East Sage areas, a two-phase development approach would be implemented. **Figure 2.5-3** illustrates the Phase I construction that would include:

- Phase I construction would include the development of the Poker Flats Pit and an undisturbed designated mule deer migration corridor that is approximately 790 feet wide at its narrowest point and 2,845 feet wide at its widest point between Poker Flats Pit and the East Sage RDA;
- A 3,745-foot-wide undisturbed designated mule deer migration corridor would be maintained between the Poker Flats RDA and the South Poker Flats HLF during Phase I. **Figure 2.5-4** illustrates that during Phase II construction, the designated mule deer migration corridor of approximately 4,450 feet at its narrowest point would be maintained between the Poker Flats Pit and Duke Pit. The location of the designated mule deer migration corridor between the Poker Flats Pit and East Sage RDA identified in Phase I would remain consistent during the development of Phase II. The South Duke Pit as described for the Proposed Action would not be developed under the WRM Alternative allowing for an increase of 127 acres of undisturbed area for mule deer use.

Rock Disposal Areas

Phase I construction would include the reconfiguration of the Poker Flats RDA to facilitate the use of an undisturbed designated mule deer migration corridor ranging from 3,745 feet in width at its narrowest point between the Poker Flats RDA and the South Poker Flats HLF. The alternative Poker Flats RDA footprint would increase by approximately 58 acres in comparison to the Proposed Action to accommodate the waste rock from the Poker Flats Pit.

To facilitate mule deer migration through the east side of the NOA, the following sequence of facility construction and concurrent reclamation has been developed:

Pre-Phase I

- Prior to construction of the Poker Flats Pit (Phase I), the toe of the reconfigured East Sage RDA and the existing grubbed area (i.e., ancillary disturbance) would be resloped, covered with growth media, and seeded. Reclamation for this area within the mule deer migration corridor was completed in 2013 (**Figure 2.5-3**). As a result, a designated mule deer migration corridor would range from 790 feet wide at its narrowest point, to approximately 2,340 feet at its widest point between these two features. This designated mule deer migration corridor consists of 75 percent

undisturbed and natural topography and vegetation and 25 percent reclaimed areas between the Poker Flats Pit and the toe of the reclaimed East Sage RDA (**Figure 2.5-3**).

- Resloping, growth media application, and seeding of the toe of the East Sage RDA, located within the proposed mule deer corridor between the East Sage RDA and Poker Flats Pit would be completed prior to the beginning of construction of the Poker Flats Pit. A GMS and the haul road extending approximately 750 feet from the East Sage RDA northwest to the GMS would remain within the aforementioned mule deer migration corridor, but would be reclaimed as soon as practicable.

Phase I

- Phase I construction would include the development of the Poker Flats RDA. An undisturbed 3,745-foot-wide mule deer migration corridor would be maintained between the Poker Flats RDA and South Poker Flats HLF during Phase I (**Figure 2.5-3**).
- The designated mule deer migration corridors established during pre-Phase I on the west side of the Poker Flats Pit would be maintained for the entirety of Phase I.

Pre-Phase II

- The Poker Flats RDA would be recontoured and reseeded, and allowed to revegetate for two growing seasons prior to the commencement of Phase II development. A growing season is defined as the period from March 16 to July 15. An extension of natural landforms would be created with the utilization of existing topography when recontouring the Poker Flats RDA. The slopes would be contoured to shallower than 2.5H:1V, and undulations and non-linear features would be incorporated into these contoured slopes. Reclamation seed mixtures designed to take advantage of slope, aspect, and mule deer preference would be applied.
- The development and implementation of a monitoring effort of the Poker Flats RDA would be established in year 1 and would include maintaining precipitation records and at the end of the growing season, conducting an annual observation and status assessment of the reclaimed area to evaluate vegetation growth based on dryness of the year. To evaluate the revegetation effort after the two growing seasons, a general effectiveness and progress assessment of the revegetated Poker Flats RDA would occur. Based on the assessments, practical adaptive strategies may be imparted to adjust to the needs of the revegetation effort. If the general effectiveness and progress assessment reveals vegetative growth that remains largely suppressed, then after the third year, the development and implementation of remedial actions would take place. Adaptive and remedial actions include any one or a combination of the following: applying soil amendments, preserving soil structure, alleviating soil compaction, surface roughening, mulching, erosion control, reseeding, and utilizing a combination of reseeding methods.

Phase II

- After two growing seasons of re-vegetated areas at the Poker Flats RDA, Phase II construction would be initiated.
- During Phase II, the designated mule deer migration corridor ranging from approximately 790 to 2,000 feet wide would be retained between the Poker Flats Pit and the toe of the East Sage RDA. A designated mule deer migration corridor ranging from approximately 1,050 feet at its narrowest point to 2,675 feet at its widest point would be retained between the recontoured and reseeded Poker Flats Pit/RDA and Duke facilities (**Figure 2.5-4**).

Table 2.5-27 provides a summary of the modified RDAs within the proposed Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas. Note that the South Water Canyon RDA would not be

expanded beyond existing conditions as previously authorized; this RDA would be reduced by 136 acres. The South Duke RDA 2 would not be constructed under the WRM Alternative thus eliminating 73 acres. In addition the East Sage and Poker Flats RDAs have been modified from the Proposed Action to have an incremental capacity of 907 and 71 MT, respectively.

Table 2.5-27 WRM Alternative – Rock Disposal Area Design Parameters within the Poker Flats, Duke, Top Pit Complex, and East Sage Areas

Modified or Eliminated Rock Disposal Area	Proposed Action Surface Disturbance (acres)[1]	WRM Alternative Surface Disturbance[2] (acres)	
		Proposed Surface Disturbance[3]	Withdrawn Authorized Disturbance[4]
Casino North RDA	55	0	0
Casino South RDA	41	0	0
East Sage	30	304	-60
Poker Flats	179	237	0
Royale North RDA	150	0	0
Royale South RDA	84	0	0
South Duke RDA 2	73	0	0
South Water Canyon RDA	0	0	-136
Total	**612**	**541**	**-196**

[1] Corresponds to the Proposed Action Surface Disturbance acreages as presented in the middle column of **Table 2.4-1**.

[2] A zero indicates that no surface disturbance would be created under the WRM Alternative.

[3] Acreage values are estimated total disturbance.

[4] Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the WRM Alternative.

Ore Processing Facilities

Phase I construction would include the development of the South Poker Flats HLF. Allowing for a 3,745-foot-wide mule deer migration corridor would be maintained between the Poker Flats RDA and the South Poker Flats HLF per Phase I development (**Figure 2.5-3**). After two revegetation growing seasons at the Poker Flats RDA, Phase II construction of the Duke facilities would be initiated. As a result of the development of the Duke facilities, the previously existing 3,745-foot-wide mule deer migration corridor between the Poker Flats Pit and the Duke facilities would be reduced to an undisturbed corridor ranging from 730-foot-wide to 2,675-foot-wide and a undisturbed and reclaimed mule deer migration corridor ranging from 4,345-foot-wide to 4,450-foot-wide (**Figure 2.5-4**). Under the WRM Alternative, the North Poker Flats HLF and the North Poker Flats Process area would not be constructed as proposed for the Proposed Action. Leach material removed from the Duke and Poker Flats pits would be hauled to the South Poker Flats or Mooney HLFs. The Winrock HLF would be reclaimed.

Interpit Areas, Haul Roads, and Access Roads

The South Duke interpit areas would not be developed under the WRM Alternative as described for the Proposed Action. The haul road from Poker Flats Pit to the South Poker Flats HLF area would be converted to a light vehicle road during Phase 1 reclamation. The location and configuration of interpit areas would be modified to support the alternative facility designs within the Poker Flats, Duke, Top Pit Complex, East Sage, and South Water Canyon areas (**Figures 2.5-1** and **2.5-4**).

Ancillary and Support Facilities

GMSs would be reconfigured in support of the East Sage, Poker Flats, and South Duke RDAs. Where possible, GMSs would be located within interpit areas or on top of RDAs. Alternately, GMSs would be located at the base of proposed RDAs or other suitable areas. In either instance, GMSs would not be placed within the identified mule deer corridor, adjacent to haul road cut berms, or on the edge of RDAs immediately adjacent to the corridor. The South Duke and North Poker Flats GMSs would not be developed as described for the Proposed Action. A process solution pipeline and substations/transformers would be constructed. All other ancillary and support facilities would remain consistent with those described under the Proposed Action.

Water Management

Proposed water management including pit dewatering and storm water management within the proposed Poker Flats, Duke, Top Pit Complex, and East Sage areas would remain consistent with those described under the Proposed Action. Estimated dewatering rates of the Top Pit would range from approximately 28 gpm during the first year of dewatering and then would decline to between 22 gpm and 16 gpm over the subsequent years (Geomega 2015a).

Winrock Area

The following section outlines the development, modification, and/or expansion within the proposed Winrock area under the WRM Alternative. This section describes only that development that would differ from that detailed in the Proposed Action. **Figure 2.5-6** illustrates the following alternative facility reconfigurations within the proposed Winrock area.

Open Pits

No modifications to open pits are anticipated beyond those detailed in the Proposed Action within the Winrock area.

Rock Disposal Areas

No modifications to RDAs are anticipated beyond those detailed in the Proposed Action within the Winrock area.

Ore Processing Facilities

Under the WRM Alternative, the reclaimed Winrock heap leach facility would not be expanded from its existing footprint of 48 acres. This represents a decrease in surface disturbance of 93 acres from the Proposed Action. Under the WRM Alternative, the Winrock ore processing areas would not be constructed. This represents a surface disturbance decrease of 30 acres in comparison to the Proposed Action. Ore recovered from the Winrock Pit area would be hauled across the existing county road to the proposed South Poker Flats HLF or to the existing Mooney HLF.

Interpit Areas, Haul Roads, and Access Roads

No modifications to interpit areas, haul roads, and access roads are anticipated beyond those detailed in the Proposed Action within the Winrock area.

Ancillary and Support Facilities

No modifications to ancillary and support facilities are anticipated beyond those detailed in the Proposed Action within the Winrock area.

Water Management

Proposed water management within the proposed Winrock Area would remain consistent with those described under the Proposed Action. No pit dewatering is anticipated within the proposed Winrock Area.

Little Bald Mountain Area

Open Pits

Under the WRM Alternative, the LBM Pit area would not be expanded from its existing footprint. This represents a surface disturbance decrease of 38 acres in comparison to the Proposed Action.

Rock Disposal Areas

Under the WRM Alternative, the LBM RDAs would not be expanded from its existing footprint. This represents a surface disturbance decrease of 54 acres in comparison to the Proposed Action.

Ore Processing Facilities

Under the WRM Alternative, the LBM ore processing and heap leach facility areas would be expanded from the existing footprints similar to the Proposed Action. The heap leach facility would expand to 238 acres and accommodate approximately 84 MT of material with a height of up to 250 feet. The LBM HLF would accommodate leach material from the Top Pit Complex and the reclaimed leach material at the existing, reclaimed and released LBM HLF. New process ponds, carbon columns, and support facilities would be constructed adjacent to the proposed LBM HLF. The conceptual pond design parameters would be the same as described in **Table 2.4-25** for the Proposed Action.

Interpit Areas, Haul Roads, and Access Roads

The 19 acres of interpit area, which is part of existing authorizations, would not be required for the WRM Alternative. No development of a new interpit area would be required. The acreage for the interpit area under the Proposed Action is 17 acres. This represents a surface disturbance decrease of 17 acres in comparison to the Proposed Action.

The continued use of existing/authorized haul roads within the LBM area would occur under the WRM Alternative. The existing road to the LBM pit would not be widened for haul road use; it is currently 35 feet wide and occupies 3 acres. To access the proposed process area, a new haul road would be constructed on the east side of the LBM HLF totaling 55 acres of surface disturbance as described for the Proposed Action. The proposed Mahogany Flats haul road extending from the northeast portion of the proposed LBM HLF towards the Mooney Basin and Galaxy Area as described for the Proposed Action would not be constructed under the WRM Alternative. This represents a surface disturbance decrease of 27 acres in comparison to the Proposed Action.

Communication Sites

Existing LBM communications sites, Towers A, B, C, and D, which have been authorized under a BLM ROW, would be included in the proposed NOA boundary.

Ancillary and Support Facilities

Under the WRM Alternative, growth media stockpiles, borrow pits, transmission lines and substations, water supply, fences, ancillary areas and yards, and buildings would be the same as described for the Proposed Action in Section 2.4.1.7, Little Bald Mountain Area.

Water Management

Proposed water management within the proposed LBM Area would remain consistent with those described under the Proposed Action. No pit dewatering is anticipated within the proposed LBM Area.

Royale Area

There would be no expansion of mining activities in the Royale Area under the WRM Alternative as described below.

Open Pits

The Royale Pit would not be developed with the WRM Alternative. This represents a decrease in new surface disturbance of 92 acres in comparison to the Proposed Action.

Rock Disposal Areas

The Royale North and South RDAs would not be developed under the WRM Alternative. This represents a decrease in new surface disturbance of 234 acres in comparison to the Proposed Action.

Interpit Areas, Haul Roads, and Access Roads

Interpit areas and a proposed haul road would not be constructed as described for the Proposed Action. This represents a decrease in new surface disturbance of approximately 68 acres in comparison to the Proposed Action.

Ancillary and Support Facilities

Under the WRM Alternative, the two growth media stockpiles would not be developed as described for the Proposed Action, a decrease in new surface disturbance of 17 acres. No other ancillary or support facilities would be developed in the Royale area with the WRM Alternative.

Under the WRM Alternative, the Royale Pit and associated RDAs, interpit areas, GMSs, ancillary facilities, haul roads, and access roads would not be constructed resulting in a decrease in new surface disturbance of 431 acres in comparison to the Proposed Action. No expansion of mining activities would occur in the Royale Area.

Casino Area

Open Pits

Under the WRM Alternative, the Casino Pit area would not be expanded from its existing footprint and would undergo concurrent reclamation. This represents a surface disturbance decrease of 84 acres in comparison to the Proposed Action.

Rock Disposal Areas

Under the WRM Alternative, the Casino North RDA would not be constructed. This represents a surface disturbance decrease of 55 acres in comparison to the Proposed Action. Under the WRM Alternative, the Casino South RDA would not be expanded from its existing footprint. This represents a surface disturbance decrease of 41 acres in comparison to the Proposed Action.

Mooney Basin and Galaxy Areas

No modification and/or expansion of facilities are anticipated beyond those detailed in the Proposed Action within the Mooney Basin and Galaxy areas. The Horsehoe and Galaxy areas will be reclaimed.

2.5.2.2 South Operations Area Project

Figure 2.5-5 illustrates the proposed life-of-mine (full build-out) for the proposed SOA project under the WRM Alternative. **Table 2.5-28** compares the surface disturbance acreages within the SOA between the Proposed Action and the WRM Alternative. No changes to the SOA PoO boundary are proposed.

Table 2.5-28 WRM Alternative – Life-of-Mine Surface Disturbance Comparison for the South Operations Area

Project Component	Proposed Action Life-of-Mine Surface Disturbance (acres)[1,2]	WRM Alternative Life-of-Mine Surface Disturbance (acres)[1]		Difference (acres/percent)[1]
		Proposed Surface Disturbance	Withdrawn Authorized Disturbance[6]	
Open Pits	347	321	0	-26 / -7
Rock Disposal Areas	1,241	1,199	0	-42 / -3
Heap Leach Facilities[3]	383	171	0	-212 / -55
Support Facilities[4]	679	633	0	-46 / -7
Exploration[5]	90	90	0	0
Total	**2,740**	**2,414**	**0**	**-326/-12**

1 Acreage values were determined from GIS data for the SOA project components only. Acreage values may vary due to rounding.

2 Refer to **Table 2.4-2** for detailed acreages by project component.

3 Heap leach facilities include heap leach facilities, tailing impoundments, and process areas.

4 Support facilities include haul roads, interpit areas, well access roads, maintenance/administrative facilities, silt pits, interpit, GMSs, monitoring wells, communication sites, transmission line corridors, and other ancillary disturbances. Support facility acreage includes 6 acres of facilities for which locations are not yet known. These acreages are not included in the GIS.

5 The location of exploration acreage is not defined and is therefore not included GIS files and is not shown in figures. These acres are included the impact analysis contained in Chapter 3.0.

6 Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the WRM Alternative.

Land Ownership and Mining Claims

Surface ownership and mining claims within the proposed SOA would remain consistent with those presented in Section 2.4.2.1, Land Ownership and Mining Claims.

Schedule and Work Force

The SOA project would commence as early as year 2, pending permit approvals. Construction-related activities would commence in mine year 2 and continue through year 4. Operation-related activities would commence in mine year 3 and continue through year 12. Leach material processing would continue for approximately 3 years after mining operations cease. Reclamation would begin in mine year 1 and would be conducted through year 18. Closure would begin in year 3 and occur through year 38. Reclamation monitoring would be conducted for a minimum of 3 years for each reclaimed area or until revegetation stability has been achieved. Closure and post-closure fluid monitoring would continue for a minimum of 5 years for each closed component. **Tables 2.5-29** and **2.5-30** illustrate the proposed project timeline; and conceptual schedule for reclamation, closure, and post-closure monitoring activities under the WRM Alternative for the proposed SOA project, respectively.

Table 2.5-29 North and South Operations Area Facilities WRM Alternative – Project Timeline for the South Operations Area Project[1]

Operational Activity	Years															
	1	2	3	4	5	6	7	8	9	10	11	12	13 to 18	19 to 21	26 to 38	39 to 68
Construction																
Operation																
Reclamation																
Closure[2]																
Reclamation Monitoring																
Post-Closure Monitoring[3]																

[1] This schedule is conceptual and subject to changes due to mining sequences that may affect the overall plan.

[2] Closure consists of fluid management and reduction at heap leach facilities.

[3] Post-closure monitoring would be conducted for at least 5 years and could continue up to 30 years following completion of heap leach processing based on current NDEP regulations. The duration of the BLM's post-closure monitoring would depend on the project's final closure plan and its implementation.

Source: Barrick 2015.

Under the WRM Alternative, no changes to the SOA work force are anticipated. Work force estimations within the proposed SOA would remain consistent with those presented in Section 2.4.2.2, Proposed Schedule and Work Force.

Vantage and Luxe Areas

The following section outlines the development, modification, and/or expansion of each facility located within the proposed Vantage and Luxe areas within the proposed SOA project under the WRM Alternative. **Figure 2.5-5** illustrates the following alternative facility reconfigurations within the proposed Vantage and Luxe areas.

Open Pits

No modifications to open pits are anticipated beyond those detailed in the Proposed Action within Vantage or Luxe areas; however, changes to material handling in these areas would occur to support the alternative objectives as follows:

- Leach material from the Vantage Pit would be hauled to the Vantage HLF; and
- Leach material from the Gator Pit would be hauled to the Vantage HLF.

Under the Proposed Action leach material would be hauled to either the Vantage HLF or Gator HLF from both the Vantage Pit and Gator Pit.

Rock Disposal Areas

No modifications to rock disposal areas are anticipated beyond those detailed in the Proposed Action within the Vantage and Luxe areas.

Ore Processing Facilities

Existing/authorized and proposed HLFs within the proposed Vantage and Luxe areas would be modified to minimize disturbance to greater sage-grouse leks and associated General, Priority, and Core habitat. The proposed Gator HLF and associated process facilities would not be constructed, which would result in the removal of approximately 274 acres of disturbance in comparison to the Proposed Action. To accommodate the heap leach material from the Vantage, Luxe, and Gator pits, the proposed Vantage HLF would be expanded to the east and south by approximately 37 acres in comparison to the Proposed Action.

Table 2.5-30 North and South Operations Area Facilities WRM Alternative – Conceptual Reclamation Schedule for the South Operations Area Project[1]

Component	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045 to 2053	2054 to 2084
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30 to 38	39 to 68
Reclamation																															
Open Pit Closure[2]																															
Pit Safety Berm Reclamation																															
Rock Disposal Area Reclamation																															
Heap Leach Facility Earthwork																															
Process Ponds Reclamation																															
Haul Roads, Access Roads, Ancillary Facilities (Non-structure related) Reclamation																															
Structure Demolition and Reclamation																															
Processing Facility Site Reclamation																															
Well Abandonment																															
Exploration																															
Closure[3]																															
Interim Fluid Management																															
Fluid Inventory Reduction - Recirculation and Active Evaporation																															
Fluid Inventory Reduction - ET Cells																															
Monitoring																															
Reclamation Monitoring																															
Post-Closure Monitoring																															

[1] This schedule is conceptual and subject to changes due to mining sequences that may affect the overall plan.

[2] Reclamation is not ongoing during this period; however, may be initiated at any time within the period.

[3] Closure consists of fluid management and reduction at heap leach facilities.

Note: Timing of RDA reclamation is dependent on timing of Open Pit closure (for example: RDA reclamation year 6 correlates to Open Pit closure year 4).

Source: Barrick 2015.

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Table 2.5-31 provides a summary of the modified and eliminated HLFs within the proposed Vantage and Luxe areas.

Table 2.5-31 WRM Alternative – Heap Leach Facility Design Parameters within the Vantage and Luxe Areas

Heap Leach Facility	Proposed Action Surface Disturbance (acres)[1]	WRM Alternative Surface Disturbance (acres)[1]	Height (feet)[2]	Incremental Capacity (MT)[2]
Vantage	45	82	250	65.4
Gator	229	0	N/A	N/A
Total	**274**	**82**	**N/A**	**N/A**

[1] Calculation does not include tailing impoundment and process area acreages that are reflected in **Table 2.7-1**.

[2] The height and incremental capacity shown above reflects those design parameters associated with Reconfiguration Alternative.

Interpit Areas, Haul Roads, and Access Roads

The existing/authorized and proposed interpit areas and haul roads within the proposed Vantage and Luxe areas would be modified, resulting in an increase of 3 acres of new disturbance in comparison to the Proposed Action.

Ancillary and Support Facilities

Ancillary and support facilities, such as GMSs, process solution and storm water/event ponds, ancillary disturbance, haul roads, and GMSs, would be reconfigured within the proposed Vantage Area in association with the elimination of the Gator HLF and the alternative configuration of the Vantage HLF. Where possible, GMSs would be located within interpit areas or on top of RDAs.

The proposed 3,760-foot-long transmission line, with a 24-foot corridor, extending from the existing Vantage substation to the Gator process area would not be constructed under this alternative, resulting in a total surface disturbance decrease of approximately 2 acres in comparison to the Proposed Action. In addition, the proposed Vantage substation at the Gator HLF would not be constructed.

Due to the modification of the Vantage HLF, the proposed 69-kV transmission line extending from the existing Vantage substation to the Vantage Pit would increase by approximately 255 feet (**Figure 2.5-5**). Under this alternative, a substation would be installed in the vicinity of the Vantage Process area, with approximately 455 feet of 69-kV transmission line extending into the Vantage Process Area. Modifications to the proposed transmission line infrastructure would result in a net increase of approximately 2 acres of transmission line corridor disturbance within the Vantage area in comparison to the Proposed Action.

Due to the elimination of the Gator Process Area and modification of the Yankee South RDA, the 8-foot-high wildlife exclusion fences surrounding the proposed process ponds and storm water/event ponds would be adjusted to match the proposed alternative configuration. Cumulatively, between the Alligator Ridge, Vantage, and Yankee areas, a net decrease of approximately 2,860 feet of proposed wildlife exclusion fence would be anticipated. In addition, approximately 575 feet of range fence would be eliminated as a result of the alternative Yankee South RDA configuration.

Changes to ancillary disturbance associated with the removal of the Gator HLF and expansion of the Vantage HLF would result in a net decrease of approximately 34 acres of ancillary disturbance in comparison to the Proposed Action.

Due to the elimination of the Gator process area, the Vantage process area would be reconfigured to support the single administration/warehouse/truck shop building, fuel and lubricant facilities, and ponds located within the proposed Vantage and Luxe areas.

Water Management

Proposed water management including pit dewatering and storm water management within the proposed Vantage and Luxe areas would remain consistent with those described under the Proposed Action.

Yankee Area

The following section outlines the development, modification, and/or expansion of each facility located within the proposed Yankee Area within the proposed SOA project. **Figure 2.5-5** illustrates the following alternative facility reconfigurations within the proposed Yankee Area.

Open Pits

No changes to open pit configurations are proposed within Yankee Area; however, changes to material handling in these areas would occur to support the alternative objectives as follows:

- A larger portion of the southern end of the Yankee Pit would be backfilled with carbonate-rich material to the original ground surface. Approximately 22.1 MT of carbonate-rich backfill, representing an increase of 12.5 MT, would be placed in the Yankee Pit. The modified Yankee Pit backfill area would form the base for a portion of the Yankee South RDA, resulting in a reduced footprint of 27 acres in comparison to the Proposed Action (**Figure 2.5-5**).

Rock Disposal Areas

The Yankee South RDA would be modified to minimize disturbance to greater sage-grouse leks and associated habitats. The Yankee South RDA would be modified and reduced in size by approximately 42 acres in comparison to the Proposed Action. As previously stated, the modified Yankee Pit backfill area would form the base for a portion of the Yankee South RDA, resulting in a reduced footprint between the Yankee South RDA and Yankee HLF. **Table 2.5-32** provides a summary of the modified and eliminated RDAs within the proposed Yankee Area.

Table 2.5-32 WRM Alternative – Rock Disposal Area Design Parameters within the Yankee Area

Rock Disposal Area	Proposed Action Surface Disturbance (acres)	WRM Alternative Surface Disturbance (acres)[1]	Height (feet)[2]	Incremental Capacity (MT)[2]	Source of Waste Rock Material
Yankee South	239	197	250	60.8	Yankee Pit
Total	**239**	**197**	**N/A**	**N/A**	**N/A**

[1] There are 99 acres of the proposed Yankee Pit that would be converted to the Yankee South RDA. The overlapping disturbance footprint between the proposed Yankee Pit and the Yankee South RDA is included within the Yankee South RDA.

[2] The height and incremental capacity shown above reflects those design parameters.

Ore Processing Facilities

No modifications to proposed ore processing facilities are anticipated within the proposed Yankee Area.

Interpit Areas, Haul Roads, and Access Roads

The existing/authorized and proposed interpit areas and haul roads within the proposed Yankee Area would be modified, resulting in a less than 1-acre surface disturbance decrease in comparison to the Proposed Action. Specifically, the haul road and interpit area was modified to support the alternative Yankee South RDA configuration.

Ancillary and Support Facilities

Support facilities within the proposed Yankee Area, such as GMSs, would be modified to support the alternative Yankee South RDA design. Where possible, GMSs would be located within interpit areas or on top of RDAs. Alternately, GMSs would be located at the base of proposed RDAs. In either instance, GMSs would not be placed within the identified mule deer corridor, adjacent to haul road cut berms, or on the edge of RDAs immediately adjacent to the corridor. Disturbed acres for alternative support facilities presented in **Table 2.5-15** reflect an increase for GMSs that may be required to accommodate existing topography and future reclamation activities.

Water Management

Proposed water management including pit dewatering and storm water management within the proposed Yankee Area would remain consistent with those described under the Proposed Action.

2.5.2.3 Comparison of WRM Alternative to the North and South Operations Area Reconfiguration Alternative

This section summarizes the differences between the WRM Alternative and the Reconfiguration Alternative. Proposed facility footprints under the WRM Alternative are the same as those previously discussed under the North and South Operations Area Reconfiguration Alternative (Section 2.5.1), with the following notable exceptions located in the western portion of the NOA:

- The Redbird Pit facility footprint would be reduced by 144 acres in comparison to the Reconfiguration Alternative;
- The Redbird RDA footprint would be reduced by 258 acres in comparison to the Reconfiguration Alternative. The portion of the Redbird RDA facing the Redbird Pit would be concurrently reclaimed to an overall 3H:1V slope;
- The Redbird Interpit area footprint would be reduced by 36 acres in comparison to the Reconfiguration Alternative;
- The Numbers Pit facility footprint would be reduced to the existing footprint and no further mining would occur, representing a reduction of approximately 109 acres in comparison to the Reconfiguration Alternative;
- The Numbers Complex Interpit area and GMS facility would not be developed, representing reduction of 49 acres in comparison to the Reconfiguration Alternative;
- The North 1 RDA footprint would be reduced by 50 acres in comparison to the Reconfiguration Alternative and the northern portion of the RDA would be reclaimed in 2015;
- The entire portion of the LRJ haul road was reclaimed in 2015;
- The North 4 RDA would be reclaimed in 2015; and
- The currently disturbed area between the BMM 2/3 HLF and the administrative complex would not be developed.

Table 2.5-33 provides a summary comparison of the acreage differences between proposed facility footprints within the North and South Operation Areas under the Reconfiguration Alternative and the WRM Alternative.

Table 2.5-33 WRM Alternative Surface Disturbance Comparison with the Reconfiguration Alternative, North and South Operations Areas

Project Component	Reconfiguration Alternative Surface Disturbance (acres)[1]		WRM Alternative Surface Disturbance (acres)[4]		Difference (acres/percent)[1]
	Proposed Surface Disturbance	Withdrawn Authorized Disturbance[4]	Proposed Surface Disturbance	Withdrawn Authorized Disturbance[5]	
Open Pits	885	-163	780	-224	-166/-19
Rock Disposal Areas	2,550	-1,325	2,345	-1,461	-341/-13
Heap Leach[2]	678	0	678	0	0/0
Support Facilities[3]	1,465	-447	1,373	-484	-130/-9
Exploration	90	0	90	0	0/0
Total	**5,668**	**-1,934**	**5,266**	**-2,169**	**-636/-11**

[1] Acreage values were determined from GIS data that combined the NOA and SOA project components. Acreage values may vary due to rounding.

[2] Heap leach facilities include heap leach facilities, tailing impoundments, and process areas.

[3] Support facilities include haul roads, interpit areas, well access roads, maintenance/administrative facilities, silt pits, interpit, GMSs, monitoring wells, communication sites, transmission line corridors, and other ancillary disturbances. Support facility acreage includes 8 acres of facilities for which locations are not yet known. These acreages are not included in the GIS.

[4] Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the alternative.

Table 2.5-34 provides a summary of the acreage differences between proposed facility footprints within the NOA under the Reconfiguration Alternative and the WRM Alternative.

Additional Proposed WRM Mule Deer Design Features

Under the WRM Alternative, Barrick has committed to implementing the following measures to facilitate mule deer migration through the NOA:

- A haul truck travel restriction would be implemented on the existing haul road from the water fill stand to the Numbers Pit Complex (**Figure 2.5-7**).
- A haul truck travel restriction would be implemented on the existing haul road to the Rat Pit to prohibit haul truck traffic. Haul truck traffic would be prohibited with exceptions for reclamation activities (**Figure 2.5-7**).
- A snow management route would be implemented on the west side of the NOA during periods of increased snow accumulation (**Figure 2.5-6** and **Figure 2.5-7**). This route would be actively cleared of snow to facilitate mule deer movement through the NOA during severe winters.

ıble 2.5-34 WRM Alternative Surface Disturbance Comparison with the Reconfiguration Alternative, North Operations Area

Project Component	Reconfiguration Alternative Surface Disturbance (acres)[1]		WRM Alternative Surface Disturbance (acres)[4]		Difference (acres/percent)[1]
	Proposed Surface Disturbance	Withdrawn Authorized Disturbance[4]	Proposed Surface Disturbance	Withdrawn Authorized Disturbance[5]	
Open Pits	564	-163	460	-224	-166/-29
Rock Disposal Areas	1,351	-1,325	1,145	-1,461	-341/-25
Heap Leach[2]	507	0	507	0	0
Support Facilities[3]	832	-447	740	-484	-130/-16
Exploration	0	0	0	0	0
Total	**3,254**	**-1,934**	**2,852**	**-2,169**	**-637/-20**

[1] Acreage values were determined from GIS data for the NOA project components only. Acreage values may vary due to rounding.

[2] Heap leach facilities include heap leach facilities, tailing impoundments, and process areas.

[3] Support facilities include haul roads, interpit areas, well access roads, maintenance/administrative facilities, silt pits, interpit, GMSs, monitoring wells, communication sites, transmission line corridors, and other ancillary disturbances. Support facility acreage includes 8 acres of facilities for which locations are not yet known. These acreages are not included in the GIS.

[4] Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the alternative.

2.6 Agency Preferred Alternative

In their selection of the agency preferred alternatives for the project, BLM decision-makers reviewed the Draft EIS and considered the alternatives and their relative impacts on resources, as well as corresponding public and agency input. The agency preferred alternative presented in this Final EIS was chosen to meet the agency purpose and need, and statutory and regulatory requirements, as well as Operator's objectives while balancing federal land managers' multiple use mandate.

The BLM has identified the WRM Alternative as the Agency Preferred Alternative. The BLM selected this alternative because it both meets the BLM Purpose and Need and the Operator's Objective (as described in Chapter 1), while providing for the long-term sustainability of the natural and cultural resources in the affected environment as mandated by FLPMA. The WRM Alternative does this by 1) reducing overall surface disturbance affecting multiple resources (by 56 percent as compared to the Proposed Action); 2) eliminating the potential baseflow reductions to the South Water Canyon and JBR No.14 springs expected under the Proposed Action and Reconfiguration Alternative; 3) minimizing impacts to mule deer by maintaining more mule deer migration corridors under the Proposed Action and wider migration corridors than under the Reconfiguration Alternative; and 4) reducing visual impacts at the Pony Express Trail, Ruby Lake NWR, Fort Ruby National Historic Landmark and other key observation points as compared to both the Proposed Action and Reconfiguration Alternatives.

2.7 Environmentally Preferred Alternative

The environmentally preferred alternative is the alternative that, on balance, appears to best promote the national environmental policy in Section 101 of the NEPA. This is ordinarily the alternative that causes

the least damage to the biological and physical environment and best protects, preserves, and enhances the historic, cultural and natural resources (Question 6a, CEQ, Forty Most Asked Questions Concerning NEPA Regulations, March 23, 1981). The BLM has determined that the WRM Alternative is also the environmentally preferable alternative.

2.8 Alternatives Considered but Eliminated from Detailed Analysis

The alternative development process included several workshops and meetings to address key resource concerns, including impacts to mule deer migration and greater sage-grouse habitat. This process included collaboration between BLM, NDOW, Barrick, and other cooperators to determine facility reconfigurations, and project sequencing and phasing to address these concerns. Relevant public scoping comments also were considered. As part of this process, several potential alternative concepts were discussed at great length, and in many cases, eliminated from further detailed analysis. This section of the EIS describes the alternatives considered but eliminated from detailed analysis by the BLM and the rationale for their elimination. The alternatives were considered relative to their means of addressing the identified purpose and need, their technical and economic feasibility, as well as their potential to address environmental issues and reduce potential impacts.

2.8.1 Complete Pit Backfilling

An alternative of complete pit backfilling of either all or some pits with carbonate-rich material was considered to decrease long-term physical disturbance, maintain mule deer migration corridors, and address concerns regarding groundwater depletion through pit lake evaporation. This alternative was eliminated from detailed analysis for the following reasons:

1. Complete pit backfilling of all proposed pits would not be economically feasible because the waste rock material would have to be handled twice; first, to haul the waste rock material to RDAs, and second, to haul the waste rock material back into the pits. Over 4.8 million truck loads would be required to completely backfill all pits with waste rock (**Table 2.6-1**).
2. The Proposed Action already proposes to complete partial pit backfilling on pits with bottom elevations at or below the groundwater level with carbonate-rich material. This would address any issues associated with groundwater depletion.
3. Complete pit backfill with carbonate-rich material is not possible since there would not be enough carbonate-rich backfill material to completely backfill all pits. Since leached material cannot be returned to the pit, the total amount of available proportional carbonate-rich pit backfill would range from approximately 30 to 80 percent of the total pit volume.
4. Complete backfilling of pits with carbonate-rich material would limit future access to potential mineral resources beneath backfilled pits. Additionally, pit backfilling would result in the loss of reasonable access for exploration and development of additional potential mineral resources without significant additional physical disturbance.
5. Two alternatives to address impacts to mule deer migration corridors has been developed and retained for detailed analysis (see Section 2.5.1, North and South Operations Area Facilities Reconfiguration Alternative, and Section2 .5.2, North and South Operations Area Western Redbird Modification Alternative).
6. Complete pit backfill of any of the pits with carbonate-rich backfill would not be economically feasible due to the double-handling of waste rock mentioned above. Additionally, since the leached material cannot be returned to the pit and since there would not be enough carbonate-rich backfill material solely from the pit; waste rock material from another pit would have to be hauled into the backfill pit.
7. Complete pit backfill with carbonate-rich material would require similar heavy equipment operation and traffic as required for pit excavation. This would result in a substantial increase in

exhaust emissions, including greenhouse gas (GHG) (e.g., carbon dioxide [CO_2], methane, etc.) and particulate matter (PM), with the potential to further impact air quality in the area.

Table 2.8-1 Estimated Number of Truck Loads to Backfill All Pits.

Pits[1] by Area	Loads
Casino Area	70,039
Mooney Basin/Galaxy Area: Bida	21,581
Poker Flats, Duke, Top Pit Complex, East Sage, South Water Canyon Area: Duke	62,617
Poker Flats, Duke, Top Pit Complex, East Sage, South Water Canyon Area: South Duke	245,606
Poker Flats, Duke, Top Pit Complex, East Sage, South Water Canyon Area: Poker	115,154
Redbird and Rat Areas	1,529,116
Gator Area	16,451
Vantage and Luxe Area: Saddle Luxe	16,117
Vantage and Luxe Area: Luxe	16,562
Vantage and Luxe Area: Vantage	800,979
Winrock Area	186,195
Yankee Area	298,893
Total Truck Loads	4,842,948

[1] Proposed pits only; existing and authorized pits are not included.

Source: Barrick 2014d.

2.8.2 Partial Pit Backfilling of All Pits

Partial pit backfilling of all pits with carbonate-rich material was considered as an alternative to reduce impacts from long-term physical disturbance and address concerns regarding groundwater depletion through pit lake evaporation for pits that would have water. This alternative was eliminated from detailed analysis for reasons similar to why the Complete Pit Backfilling Alternative was eliminated from detailed analysis. As described in Section 2.6.1, Complete Pit Backfilling, the total amount of available proportional carbonate-rich pit backfill would range from approximately 30 to 80 percent of the total pit volume. Assuming the use of the available backfill material, 30 percent would result in an estimated 1,452,884 loads and if 80 percent were available would result 3,874,358 loads (80 percent of 4,842,948 truck loads from **Table 2.6-1**) to partially backfill all pits with waste rock, making this alternative economically infeasible. In addition, this alternative would result in sterilization of the mineral resource by limiting future access to potential mineral resources beneath partially backfilled pits. Two alternatives to address impacts to mule deer migration corridors has been developed and retained for detailed analysis (see Sections 2.5.1 and 2.5.2). The Proposed Action already proposes to complete partial pit backfilling on all pits with bottom elevations at or below the groundwater level with carbonate-rich material. This would address any issues associated with groundwater depletion. Partial pit backfill with carbonate-rich material would require similar heavy equipment operation and traffic as required for pit excavation. This would result in a substantial increase in exhaust emissions, including GHG (e.g., CO_2, methane, etc.) and PM, with the potential to further impact air quality in the area.

2.8.3 No Expansion or Development of Either the North Operations Area or South Operations Area

An alternative that would only allow for the expansion of mining operations at either the BMM NOA or the SOA was considered to reduce overall impacts to greater sage-grouse habitat and/or visual impacts. Removal of either of the operation areas from the expansion would substantially reduce mine production. Removal of the SOA expansion would reduce overall estimated production of the mine by approximately

30 percent (80.4 MT); removal of the NOA expansion would reduce overall estimated production of the mine by approximately 70 percent (198.2 MT). Accordingly, this alternative was eliminated from detailed analysis because it does not meet the purpose and need of the federal action to allow Barrick the opportunity to construct and operate an expanded and new gold mine and associated facilities in the project area or BLM's Need to respond to Barrick's PoO Amendment and application while preventing unnecessary or undue degradation of public land and ensuring future post-mining land uses. Additionally, the visual and wildlife concerns that this alternative was meant to address are being addressed through two alternatives already retained for detailed analysis as discussed in Section 2.5, Alternatives to the Proposed Action.

2.8.4 No Development of Pits below Groundwater Level

An alternative was considered that would preclude the continued expansion of open pits below the perched bedrock aquifer (approximately 6,000 to 6,200 feet asml). The purpose of this alternative would address potential groundwater depletions due to pit lake evaporation. This alternative would preclude the downward expansion of the Redbird Pit and Top Pit Complex. These two proposed pits provide a total of approximately 95 MT of produced leach material under the Proposed Action and Reconfiguration Alternative. This represents approximately 34 percent of the total production of leach material for the entire BMM under these two alternatives. The WRM Alternative substantially reduces the size and depth of the Redbird Pit such that the proposed pit would no longer intersect the groundwater table. The combined leached material for the Redbird and Top Pit Complex would be reduced to 45 MT under the WRM Alternative. Removing the Top Pit from the project would not meet the purpose and need of the federal action to allow Barrick the opportunity to construct and operate an expanded and new gold mine and associated facilities in the project area or BLM's Need to respond to Barrick's PoO Amendment and application while preventing unnecessary or undue degradation of public land and ensuring future post-mining land uses. Additionally, potential issues related to groundwater depletion would be addressed under all alternatives through partial pit backfilling with carbonate-rich material of all existing and/or proposed pits that intercept groundwater as discussed in Section 2.6.2, Partial Pit Backfilling of all Pits and Section 3.3 Water Quality and Quantity. Under all alternatives, these pits would be backfilled with carbonate-rich material to an elevation above the projected groundwater rebound elevation.

2.8.5 Facility Specific Reconfigurations

Although they were not proposed as standalone alternatives, several combinations of facility reconfigurations were initially considered during the development of the Reconfiguration Alternative. These reconfigurations included; moving the Redbird RDA to the west, timing restrictions on construction and operations for greater sage-grouse, removal and/or reclamation of haul roads near Horseshoe Pit, complete removal of the Duke and South Duke facilities, partial backfill of Poker Flats pit with material from the East Sage RDA, phasing of construction and operations of the Duke, South Duke, Poker Flats and Casino pits, building overpasses for mule deer migration, increasing the capacity of the Mooney Heap Leach Facility to elimination the need for the LBM HLF, elongating the Redbird RDA to the north and south, consolidating the south Poker Flats and Winrock processing facilities, and placing the Royale haul road adjacent to and paralleling the Ruby Valley County Road.

These proposed reconfigurations were reviewed and eliminated from detailed analysis because they either: 1) did not meet the project purpose and need, 2) were not technically or economically feasible to implement, or 3) did not address identified resource concerns.

2.9 Past, Present, and Reasonably Foreseeable Future Actions

Cumulative impacts are those which result from the incremental disturbance of the Proposed Action when combined with disturbances of past and present actions and RFFAs, regardless of what agency (federal or non-federal) or private entity undertakes such actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time (40 CFR 1508.7).

The BLM has identified past and present actions and RFFAs with the potential to cause cumulative impacts in combination with the proposed project. These actions were identified primarily by geographic location and type of activity of the projects that are being considered in the analysis, as well as the type of resource potentially affected.

2.9.1 Analysis Areas

The geographic extent of cumulative impacts varies by resource and the extent of the impacts. Impacts to certain resources would be restricted to the project-related surface disturbance footprint. Other resources, such as wildlife and range resources, may be affected over a larger area; therefore, cumulative impacts would be assessed beyond the area of project-related surface disturbance. Twelve spatially distinct cumulative effect study areas (CESAs) have been developed for the proposed project. **Table 2.7-1** summaries each CESA by resource, description, and spatial extent. Illustrations of each resource-specific CESA are presented within the Cumulative Impacts section of each resource.

Table 2.9-1 Cumulative Effect Study Areas by Resource

Resource	Description	Spatial Extent (acres)
Geology and Minerals, Paleontology	Regional Exploration Plan Boundary	140,795
Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality	Huntington Valley, Newark Valley, Long Valley, and Ruby Valley hydrographic basins	2,070,999
Wildlife Resources	NDOW Hunt Area 10 (consisting of Hunt Units 101, 102, 103, 104,105, 106, 107, and 108)	4,077,720
Greater Sage-grouse	Ruby Valley and Butte/Buck/White Pine Population Management Units (PMUs)	4,202,675
Range Resources	Warm Springs, Maverick Springs, Cold Creek Horse Haven, and Ruby Valley allotments	496,591
Wild Horses	Triple B Herd Management Area	1,225,000
Cultural Resources, Native American Traditional Values	NOA and SOA PoO boundaries with a 5-mile buffer	319,092
Land Use and Access	NOA and SOA PoO boundaries: 1) from Elko via State Highway 228 south (73 miles); 2) from Ely via U.S. Highway 50 to Long Valley Road (56 miles); and 3) from Eureka via U.S. Highway 50 to State Highway 892 (45 miles)	41,950
Recreation	NOA and SOA PoO boundaries with a 4-mile buffer	259,553
Social and Economic Values/Environmental Justice[1]	Elko, Eureka, and White Pine counties	NA

Table 2.9-1 Cumulative Effect Study Areas by Resource

Resource	Description	Spatial Extent (acres)
Visual Resources	Viewsheds from key observation points (KOPs)	1,116,234
Hazardous Materials[1]	The NOA and SOA PoO boundaries, Authorized Regional Exploration Boundary, Ruby Hill Mine, and Mount Hope project areas; and transportation routes: 1) State Route 278 from Carlin to Eureka; 2) U.S. Highway 50 from Eureka east to State Route 892; 3) State Route 892 to the BMM operations; and 4) U.S. Highway 50 from Ely to the Long Valley Road	NA

[1] Acreages for the Hazardous Materials CESA, Social and Economic Values CESA/Environmental Justice CESA are not included in this table since surface disturbance is not an impact indictor used for cumulative analysis of this resource.

Source: BLM 2012a.

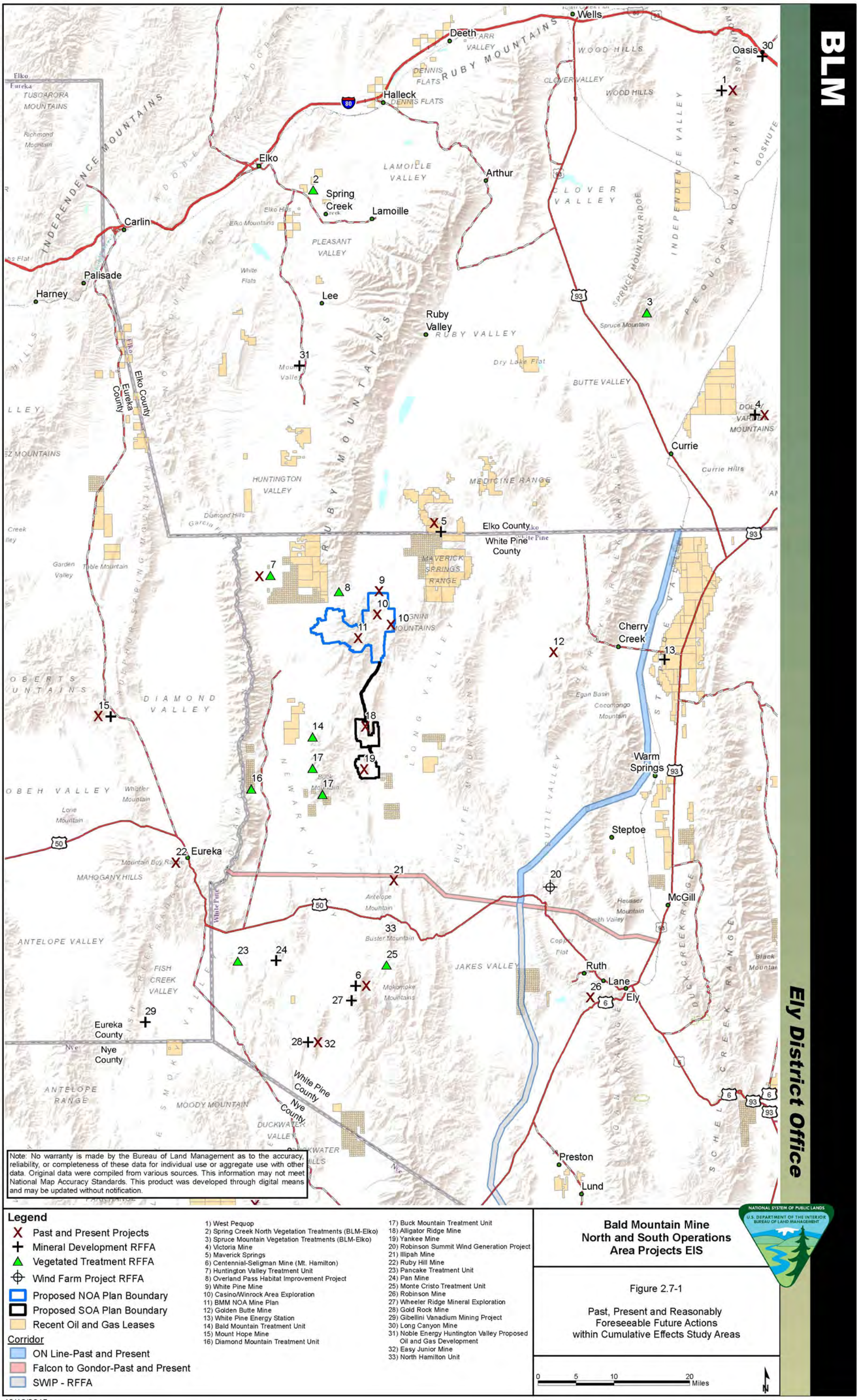
The location of past and present actions and RFFAs that have been identified as occurring within resource-specific CESAs, with the exception of Social and Economic Values/Environmental Justice CESA are shown in **Figure 2.7-1**. Each of these actions is discussed briefly in the sections below.

2.9.2 Past and Present Actions

The primary past and present actions that would affect the resources analyzed in this EIS include the following: historic exploration and mining operations; road development; power lines; and livestock grazing. Other past and present actions that may affect the resources considered in this EIS include farming, residential developments, and other county and government actions. The cumulative impacts of these past and present actions on resources are described within each of the resource sections. **Figure 2.7-1** illustrates the location of past and present actions within the CESAs, with the exception of those actions within the Social and Economic Values/Environmental Justice CESA. The following sections summarize the past and present actions analyzed within this analysis.

2.9.2.1 Historic Exploration and Mining Operations

Mining in the Newark and Long valleys and adjacent mountain ranges has historically included surface placer operations; exploration including drilling, trenching, sampling, and road construction; underground mining; and open pit mining. The surface disturbance associated with mining activities includes underground mine workings, open pits, prospect pits, dredge deposits, waste rock dumps, heap leach pads, tailing impoundments, ore processing facilities, and other structures.



Legend

- X Past and Present Projects
- + Mineral Development RFFA
- ▲ Vegetated Treatment RFFA
- Wind Farm Project RFFA
- Proposed NOA Plan Boundary
- Proposed SOA Plan Boundary
- Recent Oil and Gas Leases

Corridor

- ON Line-Past and Present
- Falcon to Gondor-Past and Present
- SWIP - RFFA

1) West Pequop
2) Spring Creek North Vegetation Treatments (BLM-Elko)
3) Spruce Mountain Vegetation Treatments (BLM-Elko)
4) Victoria Mine
5) Maverick Springs
6) Centennial-Seligman Mine (Mt. Hamilton)
7) Huntington Valley Treatment Unit
8) Overland Pass Habitat Improvement Project
9) White Pine Mine
10) Casino/Winrock Area Exploration
11) BMM NOA Mine Plan
12) Golden Butte Mine
13) White Pine Energy Station
14) Bald Mountain Treatment Unit
15) Mount Hope Mine
16) Diamond Mountain Treatment Unit
17) Buck Mountain Treatment Unit
18) Alligator Ridge Mine
19) Yankee Mine
20) Robinson Summit Wind Generation Project
21) Illipah Mine
22) Ruby Hill Mine
23) Pancake Treatment Unit
24) Pan Mine
25) Monte Cristo Treatment Unit
26) Robinson Mine
27) Wheeler Ridge Mineral Exploration
28) Gold Rock Mine
29) Gibellini Vanadium Mining Project
30) Long Canyon Mine
31) Noble Energy Huntington Valley Proposed Oil and Gas Development
32) Easy Junior Mine
33) North Hamilton Unit

Bald Mountain Mine North and South Operations Area Projects EIS

Figure 2.7-1

Past, Present and Reasonably Foreseeable Future Actions within Cumulative Effects Study Areas

0 5 10 20 Miles

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Mining activity within most of the CESAs outlined above has been centered within the Bald Mountain Mining District. This district includes both Big and LBM, the northeastern part of Buck Mountain, part of the Maverick Springs Range, and Alligator Ridge. The Bald Mountain District has been the focus of mining operations since 1869. Historic mining activities include gold, silver, copper, lead, tungsten, and antimony mining; gold and silver production in this district have been associated with placer operations, underground mining, and open pit mining for gold. Major past and present exploration and mining operations are summarized in **Table 2.7-2**.

Table 2.9-2 Past and Present Disturbance Acreages from Mining Activities

Project Type[2]	Affected CESA(s)	Past Disturbance (acres)[1]	Present Disturbance (acres)	Reclaimed Disturbance (acres)	Total
Within the Bald Mountain Mining District					
BMM Regional Exploration Plan	All	NA[1]	160	NA[1]	160
Alligator Ridge Mine	All	N/A[1]	598	N/A[1]	598
Yankee Mine	All	N/A[1]	362	N/A[1]	362
BMM NOA Mine Plan	All	N/A[1, 2]	8,899	N/A[1]	8,899
Casino/Winrock Area Exploration	All	0	225[2]	0	0
White Pine Mine	All but Land Use	274	0	274	0
Within Other Districts					
Pan Mine and Exploration	Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Wildlife Resources; Greater Sage-grouse; Social and Economic Values/Environmental Justice	0	1000	0	25
Gold Rock Mine and Exploration	Greater Sage-grouse; Social and Economic Values/Environmental Justice	142	125	0	267
Easy Junior Mine	Greater Sage-grouse; Social and Economic Values/Environmental Justice	178		178	0
Centennial-Seligman Mine (Mt. Hamilton)	Greater Sage-grouse; Social and Economic Values/Environmental Justice	365	0	0	365

Table 2.9-2 Past and Present Disturbance Acreages from Mining Activities

Project Type[2]	Affected CESA(s)	Past Disturbance (acres)[1]	Present Disturbance (acres)	Reclaimed Disturbance (acres)	Total
Robinson Mine	Greater Sage-grouse; Social and Economic Values/Environmental Justice	0	5,000	0	5,000
Illipah Mine	Greater Sage-grouse; Social and Economic Values/Environmental Justice	200	0	0	200
Golden Butte Mine	Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Wildlife Resources; Greater Sage-grouse; Social and Economic Values/Environmental Justice	175	0	155	20
West Pequop Exploration	Greater Sage-grouse; Social and Economic Values/Environmental Justice	0	100	0	100
Maverick Springs Exploration Project	Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Wildlife Resources; Greater Sage-grouse; Social and Economic Values/Environmental Justice	0	8	0	8
Mt. Hope Project Exploration	Hazardous Materials and Solid Waste; Social and Economic Values/ Environmental Justice	0	35		35
Victoria Mine	Wildlife Resources; Social and Economic Values/ Environmental Justice	15			15
Gibellini Mine Project	Social and Economic Values/Environmental Justice		5		5

Table 2.9-2 Past and Present Disturbance Acreages from Mining Activities

Project Type[2]	Affected CESA(s)	Past Disturbance (acres)[1]	Present Disturbance (acres)	Reclaimed Disturbance (acres)	Total
Long Canyon Exploration Project	Social and Economic Values/Environmental Justice	169			169

[1] Includes all surface disturbance from BMM; Mooney Basin Operation Area and LBM Mines. Because of the co-location of past and present disturbance, it is assumed that present authorized disturbance would include areas of past disturbances.

[2] While the table indicates if projects are within the Hazardous Materials, Social and Economic Values/Environmental Justice CESA, it should be noted that surface disturbance is not an impact indictor used for cumulative analysis of these resources. Sections 3.17.2.4 and 3.18.2.4 provides information regarding past and present actions and RFFAs that could impact Social and Economic Values and Environmental Justice, respectively.

Sources: American Vanadium 2013; Barrick 2012a,b; BLM 2014a,b, 2013e,f, 2012e, 2011b,c,h, 2009a, 2008e; Mineral Information Institute 2012; USFS 2014.

Larger CESAs (e.g., Water Quality and Quantity [including Wetlands], Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Wildlife Resources, and Greater Sage-grouse CESAs) may include one or more mining districts and their associated projects. Major mining actions within the following districts are summarized in **Table 2.7-2**.

The following mining districts are located within at least one or more of the BMM CESAs:

- Pancake Mining District – Founded in 1870; associated with gold, silver, and coal mining. The district includes all of the Pancake Range from Pogues Station to Pancake Summit, north of U.S. Highway 50 (Tingley 1998). The Pan Mine is a recently authorized gold project 22 miles southeast of Eureka within the Pancake Mining District. Gold Rock is an exploration project that is proposed for development into a gold mine approximately 5 miles southeast of the Pan Mine in the eastern portion of the Pancake Range. The Pancake Mining District is included within the following CESAs: Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Wildlife Resources; and Greater Sage-grouse.
- Cherry Creek/Gold Canyon/Egan Canyon/Butte Valley District – Discovered in 1872; associated with silver, gold, lead, copper, zinc, tungsten, antimony, coal, fluorspar, and beryllium mining. The district extends from Cherry Creek Canyon in the south end of the Cherry Creek Range to just north of Paris Ranch Canyon. The Gold Canyon (Egan Canyon) District is located about 5 miles to the south. Butte Valley, to the west, also is sometimes included in the Cherry Creek District (Tingley 1998). The Golden Butte Mine, located in this area, consisted of an open pit and heap leach operation (BLM 2009a). The Cherry Creek/Gold Canyon/Egan Canyon/Butte Valley District is included within the following CESAs: Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Wildlife Resources; and Greater Sage-grouse.
- Robinson Mining District – Organized in 1868; associated with copper, gold, silver, zinc, lead, iron, manganese, tungsten, molybdenum, rhenium, platinum, palladium, and nickel mining. The district is centered near the towns of Ely and Ruth, in the Egan Range (Tingley 1998). Operation and production were renewed at the Robinson Mine in late 2004. The Robinson Mining District is included within the Greater Sage-grouse CESA.
- Hunter Mining District – Discovered in 1871; associated with lead, copper, silver, gold, and uranium mining. The district is situated on the western slope of the northern Egan Range,

10 miles south of Egan Canyon and about 15 miles north of Robinson Summit (Tingley 1998). The Hunter Mining District is included within the Greater Sage-grouse CESA.

- White Pine District – Discovered in 1865; associated with silver, gold, lead, copper, tungsten, zinc, molybdenum, and tin. The district is located in the White Pine Range. The original White Pine District included the area around the camps of Hamilton and Treasure Hill; the district now extends to the southwest to include Easy Junior Ridge and Green Spring (Tingley 1998). The Illipah Mine, which is currently inactive, is located within this district (BLM 2009a). Mt. Hamilton LLC's proposed Centennial – Seligman Mine Project is located on the western flank of Mt. Hamilton in the White Pine Range at the site of Rea Gold's previously mined Northeast Seligman deposit, about 45 miles west of Ely (USFS 2014). The White Pine District is included within the Greater Sage-grouse CESA.
- Eureka Mining District – Discovered in 1864; associated with silver, lead, gold, copper, zinc, molybdenum, iron, arsenic, antimony, uranium, beryllium, and titanium. The district is located on the north slope of the northern Fish Creek Range near the Town of Eureka and includes the Ruby Hill Mine (Tingley 1998). The Eureka Mining District is included within the Socioeconomics/Environmental Justice CESA.
- Mount Hope Mining District – Discovered and organized in 1871; associated with zinc, molybdenum, silver, lead, copper, and gold (Tingley 1998). This district is located about 21 miles northwest of Eureka and includes the existing Mount Hope molybdenum mine. The Mount Hope Mining District is included within the Socioeconomics/Environmental Justice CESA.
- Gibellini Mining District – Discovered in 1942; associated with manganese, zinc, nickel, vanadium, and platinum. This district includes the southern tip of the Fish Creek Range, extending from the Gibellini Mine south into Nye County (Tingley 1998). The Gibellini Mining District is included within the Socioeconomics/Environmental Justice CESA.

Table 2.7-3 presents total quantifiable surface disturbance from mining, oil and gas development, wind energy development, exploration, and land, road, and utility corridor development by CESA. **Table 2.7-3** also includes disturbance acreages created by other smaller mineral exploration or mining activities that have occurred in the above mentioned mining districts, but which are too numerous to list by name and CESA. These smaller projects are, therefore, not included within **Figure 2.7-1**.

2.9.2.2 Other Development Actions

Oil and Gas

Exploration for oil and gas has been conducted within the Ely planning area since 1920. Since 1964, an average of about 4 wells per year have been drilled with the Ely planning area, with most of the wells being drilled in White Pine County (BLM 2008b). One well is currently in production; and one oil well is currently being plugged near Robinson Summit, just west of U.S. Highway 50 (BLM 2012b). Well locations are not illustrated in **Figure 2.7-1**; however, any disturbance acreage not reclaimed throughout the analysis areas is identified through SWReGAP data and is included in **Table 2.7-3**.

Mineral Materials

The Ely planning area contains sand and gravel (material) pits adjacent to highways and in the valleys surrounding the project area. Gravel pit locations are not illustrated in **Figure 2.7-1**; however, disturbance acreage not reclaimed throughout the analysis areas is identified through SWReGAP mining disturbance data and is included in **Table 2.7-3**.

Transportation and Utility Corridors

U.S. Highway 50 is a paved two-lane highway located south of the project area. U.S. Highway 50 follows portions of the Pony Express Trail and the Lincoln Highway and includes a 200-foot ROW with an approximate disturbance width of 100 feet. The highway forms the southern boundary of the wildlife CESA for a distance of approximately 42 miles and is within the Water Quality and Quantity and Greater Sage-grouse CESAs for approximately 24 and 53 miles, respectively. The entire portion between Eureka and Ely (totaling 77 miles) is included within the Land Use and Access CESA. All road disturbances identified through TIGER road layers for each of the CESAs was included in **Table 2.7-3**.

The Falcon-to-Gonder utility corridor is an approximately 180-mile-long 345-kV transmission line corridor connecting the Falcon substation north of Dunphy, Nevada, with the Gonder Substation north of Ely, Nevada. The corridor has a 0.5-mile ROW (BLM 2008a) located north of U.S. Highway 50. The power line was constructed in 2003, is approximately 180 miles long, has a construction disturbance width of 160 feet, and consists of steel H-frame towers (BLM 2009a). This utility corridor intersects the Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality CESA (18 miles); Wildlife Resources CESA (32 miles); and Greater Sage-grouse CESA (50 miles). Disturbance acreages are included in **Table 2.7-3**.

Table 2.9-3 Past and Present Surface Disturbance for Combined Actions by CESA[1]

Resource	Past and Present Disturbance after Reclamation (acres)[2]	Miles/Acres of Road[3]	Total Past and Present Disturbance Acreage
Geology and Minerals, Paleontology	15,010	Primary: 0 Secondary: 207 / 447	15,457
Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality	25,050	Primary: 65 / 474 Secondary: 3,581 / 5,208	30732
Wildlife Resources	58,355	Primary: 276 / 2,005 Secondary: 7,860 / 11,433	71,793
Greater Sage-grouse	47,150	Primary: 263 / 1,916 Secondary: 8,377 / 12,185	61,251
Range Resources	15,376	Primary: 0 Secondary: 945 / 1,374	16,750
Wild Horses	14,854	Primary: 16 / 116 Secondary: 2,246 / 3,267	18,237
Cultural Resources, Native American Traditional Values	15,010	Primary: 0 Secondary: 696 / 1,013	16,023

Table 2.9-3 Past and Present Surface Disturbance for Combined Actions by CESA[1]

Resource	Past and Present Disturbance after Reclamation (acres)[2]	Miles/Acres of Road[3]	Total Past and Present Disturbance Acreage
Land Use and Access	14,660	Primary: 81 / 378 Secondary: 257 / 374	15,412
Recreation	15,376	Primary: 81 / 378 Secondary: 1,177 / 1,712	17,466
Visual Resources	15,854	Primary: 0 Secondary: 1,760 / 2,559	18,413

[1] The Social and Economic Values/Environmental Justice CESA, because of their size and the nature of impacts, are not included herein. Sections 3.17.2.4 and 3.18.2.4 provides information regarding past and present actions and RFFAs that could impact Social and Economic Values and Environmental Justice, respectively. The acreage of surface disturbance within the Hazardous Materials CESA is not included because surface disturbance is not an impact indictor used for analysis of this resource.

[2] Mining disturbance acres within the Bald Mountain Mining District compiled from the NEPA documents cited in **Table 2.7-2**. Acres of surface disturbance from other mining projects, agriculture, and land development obtained from SWReGAP land cover data (USGS 2004).

[3] Miles of road obtained from TIGER road data (U.S. Census Bureau 2009). Disturbance assumptions for roads included a 60-foot ROW for primary roads and a 12-foot ROW for secondary roads.

Sources: U.S. Census Bureau 2009; USGS 2004.

The One Nevada Transmission Line (ON Line) Project, a new 236-mile 500-kV transmission line, is the first phase of the Southwest Intertie Project (SWIP), a proposed 510-mile 500-kV transmission line extending from Jerome County, Idaho. to Clark County, Nevada. The ON Line project was constructed in 2012 and 2013 from the existing Harry Allen substation north of North Las Vegas, Nevada, to the newly constructed Robinson Summit substation west of Ely, Nevada, and was energized in December 2013. This transmission line has a construction disturbance width of 200 feet and utilized four types of towers: steel tubular guyed-V, steel tubular H-frame and three-pole, steel lattice guyed-V, and steel lattice self-supporting (BLM 2011i) The ON Line utility corridor intersects the Greater Sage-grouse CESA (56 miles). Disturbance acreages are included in **Table 2.7-3**.

There also are numerous existing power lines within each of the CESAs; however, locations and disturbance acreages have not been quantified for the purposes of this analysis due to the scattered nature of the transmission lines and size of the CESAs.

The Silver State Fiber Optic Line is a communications line running between Salt Lake City, Utah, and Reno, Nevada. Within the CESAs, the fiber optic line is located directly adjacent to U.S. Highway 50 and has a total permitted disturbance width of 25 feet (BLM 2009a). The ROW intersects the Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality CESA (24 miles); Wildlife Resources CESA (42 miles); and Greater Sage-grouse CESA (53 miles). Disturbance acreages are included in **Table 2.7-3**.

Land

Other types of surface disturbance include conversion to agricultural land uses or residential and commercial development. Acreage of agricultural and other developed areas are identified through SWReGAP data and are included in **Table 2.7-3**.

2.9.2.3 District and Field Office-wide Actions

Livestock Grazing

The majority of the grazing permits within the CESAs are managed under the Ely District ROD and Approved RMP (BLM 2008b). Under the RMP, the goal is to manage livestock grazing on public lands to provide for a level of livestock grazing consistent with multiple use, sustained yield, and watershed function and health. The objective is to allow livestock grazing to occur in a manner and at levels consistent with multiple uses, sustained yield, and the standards for rangeland health. Management actions in support of this goal and objective include making approximately 11,246,900 acres and 545,267 animal unit months (AUMs) available for livestock grazing on a long-term basis throughout the Ely District (BLM 2008b).

Vegetation Treatments and Emergency Stabilization and Rehabilitation Actions

Under the Ely District ROD and Approved RMP (BLM 2008b), the Egan Field Office manages vegetation resources for resistant and resilient ecological conditions including healthy, productive, and diverse populations of native or desirable nonnative plant species appropriate to the site characteristics. Vegetation treatments is emphasizes in areas that have the best potential to maintain desired conditions or respond and return to the desired range of conditions and mosaic upon the landscape, using all available current or future tools and techniques (BLM 2008b). Emergency stabilization and rehabilitation following wildfire include soil erosion prevention measures, seeding and planting of native and/or non-native species, herbicide treatment, fence construction, and other restoration measures following fire. The emergency stabilization and rehabilitation program has treated 221,478 acres of wildfire areas within the Ely District since 1981 (BLM 2012c). Treatment acreages by CESA are not included in **Table 2.7-3**.

Other Actions

Within the Elko Field Office, the Mustang Monument Preserve, a wild horse sanctuary includes the addition of up to 1,000 wild horses on 530,000 acres of public/private lands south of Wells, Nevada, near Spruce Mountain (BLM 2012f). This action would fall within the Greater Sage-grouse CESA; and portions of the Wildlife Resources CESA.

2.9.3 Reasonably Foreseeable Future Actions

RFFAs are those for which there are existing decisions, funding, formal proposals, or which are highly probable, based on known opportunities or trends. The BLM has identified several RFFAs that would result in surface disturbance in one or more of the resource-specific CESAs.

2.9.3.1 Mineral-related Actions

The BLM has identified 11 potential mining projects within the Ely, Elko, and Battle Mountain districts and the USFS Humboldt-Toiyabe National Forest Ely Ranger District that would result in surface disturbance within any of the CESA analyzed in this EIS. **Table 2.7-4** provides a brief description of each of these projects, anticipated surface disturbance, and the CESAs in which the project would occur. RFFA locations are illustrated in **Figure 2.7-1**.

Table 2.9-4 Reasonably Foreseeable Future Disturbance from Mineral Development by CESA[1]

Action	Estimated Future Disturbance[3] (acres)	Description	Affected CESA
Pan Mine and Exploration	2,229	Proposed gold mine approximately 10 miles south of U.S. Highway 50 containing open rock disposal areas, stockpile areas, RDAs, a HLF, water supply wells and delivery storage, roads, other facilities, and a 25-kV transmission line. Anticipated to require 160 construction and 150 operations staff. (BLM-Egan Field Office)	Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Wildlife Resources; Greater Sage-grouse; Social and Economic Values/Environmental Justice
Gold Rock Mine and Exploration	3,482	Proposed gold mine approximately 15 miles south of U.S. Highway 50 containing an open pit, RDAs, a heap leach pad and associated ponds, process facility, and refinery; a mill; a carbon-in-leach plant; a tailings storage facility; water supply wells; haul roads; ancillary facilities; and a 69-kV transmission line. Anticipated to require 250 to 300 construction and 150 to 250 operations staff. (BLM-Egan Field Office)	Greater Sage-grouse; Social and Economic Values/Environmental Justice
West Pequop Exploration	300	Exploration project approximately 20 miles southeast of Wells, Nevada with road construction, drill pad construction, drilling, and reclamation activities. (BLM-Elko Field Office)	Greater Sage-grouse[2]; Social and Economic Values/Environmental Justice
Maverick Springs Exploration Project	6	Exploration project east of Ruby Lake, with road, drill pad construction, drilling, and reclamation activities. (BLM-Elko Field Office)	Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Wildlife Resources; Greater Sage-grouse; Social and Economic Values/ Environmental Justice
Victoria Mine Dump leach activities	23	Dump leach activities on the existing waste rock dump located approximately 25 miles southeast of Wells, Nevada. (BLM-Elko Field Office)	Wildlife Resources; Social and Economic Values/Environmental Justice
Wheeler Ridge Exploration Project	75	Exploration project near Mount Hamilton with road construction, drill pad construction, drilling, and reclamation activities.	Greater Sage-grouse; Social and Economic Values/Environmental Justice
Centennial-Seligman Mine (Mt. Hamilton) (White Pine District)	195	The proposed mine project includes two open pits, ore stockpiles and crushing facilities, two RDAs, transfer of ore offsite for processing, access and haul roads, power lines, exploration drill pads, roads, and ancillary and support	Greater Sage-grouse; Social and Economic Values/Environmental Justice

Table 2.9-4 Reasonably Foreseeable Future Disturbance from Mineral Development by CESA[1]

Action	Estimated Future Disturbance[3] (acres)	Description	Affected CESA
		facilities.	
Noble Energy Huntington Valley Proposed Oil and Gas Exploration	314	Proposed oil and gas exploration for 20 wells, 8 water supply wells and one potential injection well. (BLM-Elko Field Office)	Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Wildlife Resources; Social and Economic Values/Environmental Justice
Mount Hope Project	8,318	Molybdenite mining and ore processing project which would employ 400 personnel on average, with an estimated peak of 615 personnel.	Hazardous Materials and Solid Waste; Social and Economic Values/ Environmental Justice
Gibellini Mine Project	725	Proposed vanadium mine approximately 23 miles south of Eureka, Nevada containing on open pit mine with processing facilities and on-site solar power generation, 21-mile 69-kV transmission line, and 6-mile water/communications corridor. A workforce of approximately 120 employees is anticipated during the production phase of the project. (BLM-Mount Lewis Field Office)	Social and Economic Values/ Environmental Justice
Long Canyon Project	1,707	Proposed gold mine approximately 30 miles east of Wells, Nevada containing one open pit, a heap leach pad, one waste rock dump, a tailings storage facility, and other ancillary facilities. An estimated annual workforce of 300 to 500 would be employed during the life of the mine. (BLM-Wells Field Office)	Social and Economic Values/ Environmental Justice

[1] Information herein was compiled from various best available information sources regarding Proposed Action, Preferred Alternative, or selected alternative. Sources included FR notices and/or NEPA documents for each project.

[2] Only a portion of this project is contained within this CESA.

[3] While the table indicates if projects are within the Hazardous Materials, Social and Economic Values/Environmental Justice CESAs, it should be noted that surface disturbance is not an impact indictor used for cumulative analysis of these resources. Sections 3.17.2.4 and 3.18.2.4 provides information regarding past and present actions and RFFAs that could impact Social and Economic Values and Environmental Justice, respectively. Cumulative impacts from hazardous materials is discussed in Section 3.20.2.4

Sources: American Vanadium 2013; BLM 2014a,c, 2013e,f, 2012f, 2011b,c, 2008e; USFS 2014, 2013, 2012a, 2011a,b.

2.9.3.2 Other Developments and Actions

Renewable Energy

Based on the reasonably foreseeable development (RFD) scenario developed for the Ely planning area, a maximum of 5,000 acres is expected to be disturbed for construction of renewable energy facilities during the life of the RMP (BLM 2008b). The BLM has currently identified one wind energy project within the CESAs analyzed in this EIS. The Robinson Summit Wind Generation Project is a proposed 200-megawatt wind generation facility that is projected to comprise up to 83 wind turbine generators (WTGs) and is 9 miles northwest of Ely, Nevada. The proposed wind generation project location is within the Greater Sage-grouse CESA. Related and supporting components will include an underground, 345-kV electrical collection system to collect energy from the WTGs, a project substation to convert the voltage of the electrical collection system to the Robinson Summit Substation, where the project will interconnect, an operations and maintenance facility, up to three permanent and six temporary lattice meteorological towers, an interconnecting road network consisting of arterial roads and wind turbine array roads, and other facilities used to develop, build, or maintain the project (e.g., construction laydown yard, temporary batch plant, pad mounted transformers, crane paths). The proponent is currently collecting base-line studies and is anticipating beginning the NEPA process in early to mid-2015.

Transmission Line and Power Generation

The BLM has identified two proposed transmission line and energy production projects that fall completely or partially within one or more CESAs:

- Southwest Intertie Project (SWIP) – A proposed 500-kV transmission line that would extend more than 500 miles from Jerome County, Idaho, to Clark County, Nevada. In 2012-2013 southern portions of the SWIP line (the ON Line Project) were constructed, and were energized in December 2013; however, the portion running north from Ely (within the Wildlife Resources and Greater Sage-grouse CESAs for approximately 10 and 59 miles, respectively) is still pending. The 2008 RMP has designated a 0.75-mile ROW for the SWIP. Assuming a 200-foot construction ROW, as identified in NEPA documents for other portions of the line (Environmental Planning Group, Inc. 2008), construction of this line would result in up to 242 acres of vegetation disturbance within the Wildlife Resources CESA and 1,430 acres of vegetation disturbance within the Greater Sage-grouse CESA. Disturbance acreages are included in **Table 2.7-3**.
- White Pine Energy Station – A proposed coal-fired power plant is located outside of the all CESAs for this EIS; however, the proposed transmission lines, substation and borrow pit associated with this power plant (comprising 982 acres of ROW) would fall within the Greater Sage-grouse CESA. This project has been postponed; however, it is still considered reasonably foreseeable and is included in the cumulative impact analyses.

Leasable and Mineral Material Development RFFAs

The BLM and USFS have leased lands for oil and gas exploration and development within one or more CESAs. The RFD scenario developed for the Ely planning area anticipates 8,400 acres of short-term (5 to 10 years) disturbance and 1,400 acres of long-term (20 years) disturbance from oil and gas development. Additional federal lease sales are projected to average approximately 220,000 acres per year for the next several years. Long Valley (within the Water Quality and Quantity [including Wetlands], Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Wildlife Resources; Cultural Resources, Native American Traditional Values; Recreation; Visual Resources; Range Resources; Wild Horses; and Greater Sage-grouse CESAs) was identified as the one of the focal areas of future exploration within the Ely District. The 2014 Ely planning area oil and gas lease sales to date includes parcels east and northeast of Ruby lake (within the Water Quality and Quantity [including Wetlands], Soils Resources, Vegetation Resources, Special Status Plant

Species, Noxious Weeds and Invasive Species, Air Quality; Visual Resources; Wildlife Resources; and Greater Sage-grouse CESAs) (BLM 2014c).

The 2013 Ely planning area oil and gas lease sales includes parcels within the within the Maverick Springs Range (within the Water Quality and Quantity [including Wetlands], Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Cultural Resources, Native American Traditional Values; Visual Resources; Wildlife Resources; Wild Horses; and Greater Sage-grouse CESAs), the Newark Lake Alkali Flat area (within the Water Quality and Quantity [including Wetlands], Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Visual Resources; Wildlife Resources; Wild Horses; and Greater Sage-grouse CESAs),as well as parcels within the Steptoe Valley (all or partially within the Greater Sage-grouse CESA) (BLM 2013e).

The 2012 Ely planning area oil and gas lease sales includes parcels near Warm Springs and McGill (potentially within the Greater Sage-grouse CESA) (BLM 2014b).

The 2011 Ely planning area for oil and gas lease sales includes parcels within the Long, Ruby, and Huntington valleys (potentially within all CESAs); Butte Valley and Diamond Mountain (within the Wildlife Resources CESA); and Jake's Valley, McGill and Duckwater (all or partially within the Greater Sage-grouse CESA) (BLM 2011d).

The Humboldt-Toiyabe National Forest released a ROD in 2007 authorizing 255,603 acres for oil and gas exploration leases. This includes areas within the White Pine Mountains (within the Greater Sage-grouse CESA). The Humboldt-Toiyabe National Forest also is currently preparing an EIS that would make approximately 662,700 acres of USFS lands administratively available for geothermal leasing. This includes 3,538 acres within the Ely Ranger District (within the Greater Sage-grouse CESA) (USFS 2011b).

The RFD scenario developed for the Ely planning area also anticipates 200 acres of surface disturbance from development of geothermal energy and 1,000 acres from mineral materials mining activity over the next 15 years (BLM 2008b). Locations have not been identified to date.

Fuels Reduction and Vegetation Treatment

The CESAs contain several proposed fuels reduction and vegetation treatment projects. Locations of the proposed fuels reduction and vegetation treatment projects are illustrated in **Figure 2.7-1**; proposed vegetation treatment project acreage by CESA is provided in **Table 2.7-5**.

- Overland Pass Habitat Improvement Project – A joint USFS/BLM-Ely District effort consists of thinning or prescribed burn treatments of 18,572 acres of sagebrush communities and pinyon-juniper woodlands to reduce tree densities within sagebrush communities (BLM 2014c) (All CESAs except Geology and Land Use).
- East Humboldt Mountain Range Vegetation Treatment (USFS) – Consists of treatment of 7,500 acres of pinyon-juniper woodlands within using mechanical and prescribed fire treatment methods to reduce fuels and address pinyon-juniper encroachment into sagebrush ecosystems (USFS 2011c) (Wildlife and Greater Sage-grouse CESAs).
- Spruce Mountain Restoration Project (BLM-Elko Field Office) – Consists of treatment of 10,000 acres of pinyon-juniper and cheatgrass impacted areas primarily within crucial mule deer winter range using prescribed fire treatments, mechanical devices, and/or herbicide applications over a 5- to 10-year period (BLM 2012h) (within the Wildlife CESA; 6,750 acres also are within the Greater Sage-grouse CESA).

- Spring Creek North Vegetation Treatments (BLM-Elko Field Office) – Would include the continuation of a 961-acre mowed fuel break to protect the community of Spring Creek (BLM 2010c) (Wildlife CESA).
- Spruce Seedings Vegetation Treatments (BLM-Elko Field Office) – Would be continued on 7,510 acres. Treatments would include seeded chaining to reduce hazardous fuels and diseased trees and restore mule deer habitat (BLM 2010c) (Wildlife and Greater Sage-grouse CESAs).
- Spruce Mountain Vegetation Treatments (BLM-Elko Field Office) – Would include the continuation of six seeded openings (153 acres) to reduce use on salt-desert scrub communities, improve range conditions, and improve forage and habitat diversity for wildlife (BLM 2010c) (Wildlife and Greater Sage-grouse CESAs).
- Newark and Huntington Watershed Vegetation Treatments – Would be conducted on over 45,450 acres of pinyon-juniper and sagebrush ecosystems within the following areas (BLM 2013a):
  - Buck Mountain Treatment Unit: Primary treatment options include mechanical pinyon pine and juniper treatments, mechanical sagebrush treatments, chemical treatments for the suppression of sagebrush, pinyon pine, and juniper, and seeding of 5,800 acres (All CESAs except Geology and Land Use).
  - Bald Mountain Treatment Unit: Primary treatment options include mechanical pinyon pine and juniper treatments, mechanical sagebrush treatments, chemical treatments for the suppression of sagebrush, pinyon pine, and juniper, seeding, and prescribed fire of 10,300 acres treatments (All CESAs).
  - Huntington Valley Treatment Unit: Primary treatment options include mechanical sagebrush treatments, chemical treatments for suppression of sagebrush, and seeding of 9,650 acres (Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Wildlife; Greater Sage-grouse CESAs).
  - Hamilton Treatment Unit: Primary treatments are the same as the Bald Mountain Treatment Unit and would be conducted on 6,800 acres (Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Greater Sage-grouse CESAs).
  - Pancake Treatment Unit: Primary treatments are the same as the Buck Mountain Treatment Unit and would be conducted on 1,450 acres (Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Greater Sage-grouse CESAs).
  - Monte Cristo Treatment Unit: Primary treatments are the same as the Buck Mountain Treatment Unit and would be conducted on 4,000 acres (Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Greater Sage-grouse CESAs).
  - Diamond Mountain Treatment Unit: Primary treatments are the same as the Huntington Valley Treatment Unit and would be conducted on 7,450 acres (Wildlife CESA).

Table 2.9-5 Acreage of Proposed Vegetation Treatments by CESA

CESA[1]	Treatment Acreage
Geology and Minerals, Paleontology	10,300
Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality	56,572
Wildlife Resources	77,896
Greater Sage-grouse	78,485
Range Resources	34,672
Wild Horses	34,672
Cultural Resources, Native American Traditional Values	28,872
Land Use and Access	10,300
Recreation	34,672
Visual Resources	34,672
Hazardous Materials	28,872

[1] The Social and Economic Values and Environmental Justice CESA, because of its size and the nature of impacts, are not included herein. Sections 3.17.2.4 and 3.18.2.4 provides information regarding past and present actions and RFFAs that could impact Social and Economic Values and Environmental Justice, respectively. While the table indicates if projects are within the Hazardous Materials CESA, it should be noted that surface disturbance is not an impact indictor used for cumulative analysis of this resource. Section 3.20.2.4 provides information regarding past and present actions and RFFAs that could impact Hazardous Materials.

Sources: BLM 2014c, 2013a, 2012h, 2010c; USFS 2011c.

Other Relevant RFFAs

The following projects or management actions also could have impacts to the resources analyzed in this EIS:

- Livestock Grazing permits – Would include the continuation of livestock grazing at current levels on a long-term basis throughout the Ely District and portions of the Elko and Battle Mountain District Offices within identified CESAs.
- Riparian Protections – Would include the protection (fence enclosure) of three riparian areas within the Greater Sage-grouse CESA (Smith Spring, 30 Mile Spring, and Egan Basin projects). The total acreage for these projects is approximately 13 acres. The 30 Mile Spring project (approximately 8 acres) also would fall within the Wildlife Resources CESA.
- The USFWS Ruby Lake NWR Comprehensive Conservation Plan (CCP) – Would develop a 15-year management plan addressing potential ROWs for energy developments, pipelines, and roads and impacts of these facilities on wildlife and wildlife habitat (including fragmentation), spread of invasive weeds, and aerial predation. The 39,926-acre Refuge falls within the Water Quality and Quantity (including Wetlands), Soils Resources, Vegetation Resources, Special Status Plant Species, Noxious Weeds and Invasive Species, Air Quality; Wildlife Resources; Recreation; and Greater Sage-grouse CESAs.
- The White Pine County Wilderness Ground Disturbance Reclamation Plan – Would include the reclamation of routes closed within wilderness designation and other areas of surface

disturbances (e.g., abandoned campgrounds) within the Goshute Canyon and Bristlecone Wilderness areas (within the Greater Sage-grouse CESA) (BLM 2008c).

- The Spruce Mountain Recreation RMP Amendment (BLM-Elko District Office) – Would include the proposed change of off-highway vehicle (OHV) use from “Open” to “Limited to Designated” for the 464,217-acre Spruce Mountain area (within the Wildlife Resources; and Greater Sage-grouse CESAs) (BLM 2011f).
- The Ruby Mountain Travel Management Plan (USFS) – Would include the addition of 281 trails and 20 roads within the 450,123-acre Ruby Mountains USFS Ranger District (within the Wildlife Resources CESA; and partially within the Greater Sage-grouse CESA) (USFS 2012c).

2.10 Comparative Analysis of Alternatives

Table 2.8-1 summarizes and compares the environmental impacts between the Proposed Action, the Reconfiguration Alternative, and the WRM Alternative (Agency Preferred Alternative). Under the No Action Alternative, there would be `Detailed descriptions of impacts are presented in Chapter 3.0, Affected Environment and Environmental Consequences. The summarized impacts assume the implementation of ACEPMs but the absence of potential mitigation measures. Implementation of the potential monitoring and mitigation measures identified in Chapter 3.0 potentially would further reduce impacts.

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
Geology and Minerals			
Ore extraction	The Proposed Action would remove approximately 279 million tons of ore; 198 million tons of ore would be removed from the proposed NOA and 80 million tons of ore would be removed from the proposed SOA.	Under this Alternative, 33 million fewer tons of ore would be removed from the NOA as compared to the Proposed Action.	Under this Alternative, 83 and 50 million fewer tons of ore would be removed from the NOA as compared to the Proposed Action and Reconfiguration Alternative, respectively.
Waste rock extraction	The Proposed Action would generate 1.16 billion tons of waste rock material; 887 million tons of waste rock from the proposed NOA, and 276 million tons of waste rock material from the proposed SOA.	Under this Alternative, 124 million fewer tons of waste rock material would be extracted from the NOA as compared to the Proposed Action.	Under this Alternative, 458 and 334 million fewer tons of waste rock material would be generated from the NOA as compared to the Proposed Action and Reconfiguration Alternative, respectively.
Geotechnical and seismic stability of RDAs and HLFs	Facilities would be stable with appropriate design, construction, and closure.	Impacts would be the same as the Proposed Action.	Impacts would be the same as the Proposed Action.
Pit slope stability	Geotechnical monitoring of pits would be conducted in order to optimize pit design and monitor slope stability for the protection of mine workers during operations. Pit slopes would likely experience instability in the post closure period and adjacent reclaimed facilities that are not located a sufficient distance from the pit rim, could be affected.	Impacts would be the same as the Proposed Action.	Impacts would be the same as the Proposed Action.
Alteration of topographic or geomorphic features	Open pits and reclaimed RDAs and HLFs would result in the permanent alteration of topographic or geomorphic features on approximately 5,153 acres: 3,182 acres with the proposed NOA and approximately 1,971 acres within the proposed SOA.	The permanent alteration of topographic or geomorphic features associated with open pits and reclaimed RDAs and HLFs would decrease by approximately 1,040 acres as compared to the Proposed Action (4,113 acres total-2,422 acres within the NOA and 1,691 acres within the SOA).	As compared to the Reconfiguration Alternative, the WRM Alternative would decrease the permanent alteration of topographic or geomorphic features associated with open pits and reclaimed RDAs and HLFs by an additional 310 acres, all within the NOA.

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
Water Resources			
Impacts to hydrographic basins, erosion, and sedimentation	Under the Proposed Action, impacts to surface water resources would involve removal of approximately 25 miles of unnamed ephemeral drainages and associated contributing watershed areas.	Under the Reconfiguration Alternative, potential impacts to surface water resources would be similar to those described for the Proposed Action. In some local areas, such as the Mill Canyon vicinity near the proposed North 1 RDA and North 5 RDA, smaller disturbance footprints or modified component configurations under this alternative would reduce impacts to existing watershed characteristics in ephemeral headwater drainages.	Impacts to surface water resources would be similar to those discussed under the Reconfiguration Alternative. In the western portion of the NOA, a reduction in the disturbance footprint of the Redbird RDA and Pit under this alternative would reduce impacts to existing watershed characteristics in this area.
Dewatering and drawdown effects on perennial streams, springs, and water rights	The South Water Canyon seep and spring JBR No. 14 are located in areas that are predicted to experience groundwater drawdown from mine activities. Although there is uncertainty, there is a potential risk that drawdown could impact the springs. Perennial water sources impacted by pumping would experience a reduction in baseflow. Depending on the severity of these reductions in flow, this could result in drying up of springs and reducing the size of their associated wetland area. Potential impacts could occur to two individual surface water rights within the NOA. The intensity of impact would depend on the site-specific hydrologic conditions that control surface water discharge. For surface water rights that are dependent on groundwater discharge, a potential reduction in groundwater levels	Impacts to springs and water rights would be similar to those discussed under the Proposed Action.	No impacts to springs and water rights are anticipated within the study area under the WRM Alternative.

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
	could reduce or eliminate the flow available at the point of diversion for the surface water right.		
Water quality impacts associated with backfilled pits	Based on the geochemical characterization of the proposed backfill material to be used in the Top Pit Complex and Redbird Pits, impacts to down gradient water quality are not anticipated.	Potential impacts associated with partial backfill to preclude pit lake development would be the same as described for the Proposed Action.	Mining would extend to an elevation of 6,620 feet (amsl) in the Redbird Pit. The shallower depth of mining at the Redbird Pit would not intercept the pre-mining water table and partial pit backfill to prevent formation of a pit lake would not be required.
Water quality impacts associated with RDAs, HLFs, and other process facilities	Geochemical studies completed for development of the Adaptive Waste Rock Management Plan conclude that the potential for acid drainage and metals mobilization is low under the Proposed Action due to pervasive alkaline conditions, abundance of iron that increases the tendency for arsenic and antimony to sorb, and low rainfall.	Potential impacts to water quality associated with RDAs, HLFs, and other facilities development would be the same as described for the Proposed Action.	Potential impacts to water quality associated with RDAs, HLFs, and other facilities development would be the same as described for the Proposed Action.A Revised Waste Rock Management Plan updates the Adaptive Waste Rock Management Plan.
Soil Resources and Reclamation			
Impacts to soil	Surface disturbance activities would disturb approximately 7,097 acres of soils: 4,357 acres within the proposed NOA and 2,740 acres within the proposed SOA. Suitable topsoil and growth media would be salvaged and stockpiled during ground-disturbing activities for use in reclamation.	Surface disturbance activities would remove approximately 3,352 fewer acres of soils: 1,103 fewer acres within the NOA, 326 fewer acres within the SOA, and 1,923 acres that were previously authorized but withdrawn, as compared to the Proposed Action.	Surface disturbance activities would remove 636 fewer acres than the Reconfiguration Alternative in the NOA. The amount of permanent loss would be the same as the Reconfiguration Alternative in the SOA.

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
Permanent irretrievable loss of soil productivity	A permanent irretrievable loss of soil productivity would occur on approximately 1,210 acres in association with development of the proposed open pits, which would not be reclaimed.	A permanent irreversible loss of soil productivity would occur on approximately 325 fewer acres than the Proposed Action, in association with development of the proposed open pits, which would not be reclaimed.	A permanent irreversible loss of soil productivity would occur on approximately 104 fewer acres than the Reconfiguration Alternative, in association with development of the proposed open pits, which would not be reclaimed.
Vegetation			
Impacts to vegetation	Surface disturbance activities would disturb approximately 7,097 acres of vegetation: 4,357 acres within the proposed NOA and approximately 2,740 acres within the proposed SOA. The temporary loss of 2,706 acres of big sagebrush, 3,168 acres of pinyon-juniper, 6 acres of low sagebrush, and 7 acres of mountain brush vegetation cover types represents 14, 19, 2, and <1 percent of these cover types existing within the study area, respectively. With the exception of open pits, all project components would be reclaimed, representing a permanent loss of 1,210 acres: 863 acres of vegetation within the proposed NOA and a permanent loss of 347 acres of vegetation within the proposed SOA. The permanent loss of 344 acres of big sagebrush, 859 acres of pinyon-juniper, and 7 acres of mountain brush vegetation cover types represents 1, 4, and <1 percent of these cover types existing within the study area, respectively.	Surface disturbance activities would disturb approximately 3,352 fewer acres of vegetation: 1,103 fewer acres within the proposed NOA, approximately 326 fewer acres within the proposed SOA, and 1,934acres that were previously authorized but withdrawn, as compared to the Proposed Action. With the exception of open pits, all project components would be reclaimed, representing a permanent loss of 325 fewer acres of vegetation.	Impacts would be similar to the Reconfiguration Alternative but there would be 636 fewer acres of vegetation loss in the NOA. The amount of permanent loss of vegetation would be the same as the Reconfiguration Alternative in the SOA but would be 104 fewer acres in the NOA.

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
Impacts to special status plant species	Surveys for Nachlinger's catchfly, a BLM sensitive species, were conducted in 2012 in areas identified as suitable habitat for this species; no occurrences were recorded in these areas. Based on the limited availability of suitable habitat and the lack of known occurrences for the Nachlinger's catchfly in the project area, no impacts to the species and its habitat are anticipated.	Impacts would be the same as Proposed Action.	Impacts would be the same as the Proposed Action.
Impacts to riparian vegetation, wetlands and springs	Groundwater drawdown within the predicted mine-related maximum extent of the 10-foot groundwater drawdown contour potentially may affect two springs within the NOA. Potentially impacted springs include; South Water Canyon and JBR No. 14 springs. Reduced flows may result in the partial loss of herbaceous riparian and wetland vegetation; cessation of flows would result in the long-term loss of woody and herbaceous riparian and wetland vegetation in these areas. Up to 32.88 acres of wetland vegetation that occurs within the maximum extent of the 10-foot groundwater drawdown contour may be impacted from groundwater drawdown. No drawdown impacts are anticipated within the SOA under the Proposed Action.	Impacts to springs, wetland, and riparian vegetation would be similar to those discussed under the Proposed Action.	No impacts to springs, wetland, and riparian vegetation within the study area are anticipated under the WRM Alternative.

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
Noxious Weeds and Invasive Species			
Increased potential for establishment of noxious and non-native, invasive weeds	Under the Proposed Action, removal of vegetation may allow non-native species to become established. In addition, water draw down may promote the spread of noxious and invasive weeds at springs and seeps. Control of non-native species through Design Features, Applicant-committed Environmental Protection Measures, and the Noxious Weed Control Plan would minimize this risk.	The potential for establishment of noxious weeds and non-native, invasive weeds to become established would be the same as the Proposed Action, except 3,352 fewer acres would be disturbed. In addition, water draw down may promote the spread of noxious and invasive weeds at springs and seeps. Control of non-native species through Design Features, Applicant-committed Environmental Protection Measures, and the Noxious Weed Control Plan would minimize this risk.	The potential for establishment of noxious weeds and non-native, invasive weeds to become established would be the same as the Reconfiguration Alternative, except 636 fewer acres would be disturbed. No impacts from water drawdown are anticipated under the WRM Alternative. Control of non-native species through Design Features, Applicant-committed Environmental Protection Measures, and the Noxious Weed Control Plan would minimize this risk.
Wildlife and Fisheries Resources			
Reduction of existing wildlife habitat and displacement from existing habitat	Surface disturbance activities would result in the long-term reduction of approximately 7,097 acres of wildlife habitat. In addition, noise disturbance and human activities associated with the Proposed Action may displace foraging and/or nesting birds and other wildlife species. Mitigation measures designed to reduce impacts to wildlife species, including migratory birds would be implemented. Groundwater pumping for the mine could impact (reduce) the baseflow and associated wetland habitats at South Water Canyon Seep and JBR No. 14 Spring in the NOA. No groundwater drawdown impacts to springs, wetlands, or riparian habitats are anticipated within the SOA under the Proposed Action.	The type of noise disturbance and human activities that may cause wildlife displacement from existing habitat would be the same as the Proposed Action. However, surface disturbance activities would result in the long-term reduction of 3,352 acres fewer acres (a 47 percent decrease) of wildlife habitat as compared to the Proposed Action. Groundwater pumping under the Reconfiguration Alternative would have similar impacts to baseflow and associated wetlands at the South Water Canyon Seep and JBR No. 14 Spring as the Proposed Action.	The type of noise disturbance and human activities that may cause wildlife displacement from existing habitat would be the same as the Proposed Action. However, surface disturbance activities would result in the long-term reduction of 636 fewer acres of wildlife habitat as compared to the Reconfiguration Alternative. No impacts to seeps, springs, or wetlands within the study area are anticipated under the WRM Alternative.

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
Impacts to mule deer year-long range, winter range, and crucial winter range	Potential direct impacts would include the incremental long-term direct removal of approximately 386 acres of undisturbed mule deer year-round range, approximately 2,180 acres of undisturbed mule deer winter range, and 2,415 acres of mule deer crucial winter range within the study area.	Potential direct impacts would include the incremental long-term direct removal of 66 additional acres of undisturbed mule deer year-round range, 391 fewer acres of mule deer winter range, and 481 fewer acres of mule deer crucial winter range within the study area as compared to the Proposed Action.	Potential direct impacts would include the incremental removal of 211 fewer acres of undisturbed mule deer crucial winter range within the study area as compared to the Reconfiguration Alternative.
Impacts to mule deer migration corridors	Mine development would leave no undisturbed areas for mule deer moving north and south through the proposed NOA project. This would remove the remaining “undisturbed continuous corridors” for mule deer annual migration. Some of the impacts to mule deer under the Proposed Action would be alleviated by the mule deer design features.	This Alternative has modified mining features to facilitate mule deer movement through the proposed NOA. Compared to the Proposed Action, this alternative would provide the opportunity for improved migration through the inclusion of three designated mule deer migration corridors that would not be available under the Proposed Action. These corridors fluctuate in width, ranging from 730 feet to 4,450 feet.	This Alternative has modified mining features to facilitate mule deer movement through the proposed NOA. Compared to the Reconfiguration Alternative, this alternative would provide the opportunity for improved migration through the inclusion of wider designated mule deer migration corridors in the Numbers Pit and Redbird Pit areas. These corridors fluctuate in width, ranging from 730 feet to 4,300 feet.
Impacts to pronghorn year-round habitat and winter habitat	Potential direct impacts would include the incremental long-term reduction of approximately 2,865 acres of undisturbed pronghorn year-round habitat within the study area.	Potential direct impacts would include the incremental long-term direct removal of 1, 147 fewer acres of undisturbed pronghorn year-round habitat within the study area as compared to the Proposed Action.	Potential direct impacts would include the incremental long-term direct removal of 298 fewer acres of undisturbed pronghorn year-round habitat within the study area as compared to the Reconfiguration Alternative.
Impacts to elk year-round habitat	Potential direct impacts would include the incremental long-term reduction of approximately 5,827 acres of undisturbed elk year-round habitat within the study area.	Potential direct impacts would include the incremental long-term direct removal of 1,061 fewer acres of undisturbed elk year-round habitat within the study area as compared to the Proposed Action.	Potential direct impacts would include the incremental long-term direct removal of 298 fewer acres of undisturbed elk year-round habitat within the study area as compared to the Reconfiguration Alternative.

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
Impacts to migratory birds	Potential direct impacts to migratory birds would include the permanent loss of approximately 1,210 acres of potentially suitable breeding, roosting, and foraging habitat. This acreage of permanent loss represents approximately 2.8 percent of available habitat within the study area. This loss is expected to have minimal effect on local bird populations based on the amount of suitable breeding and foraging habitat in the surrounding area. If surface disturbing activities are unavoidable during the migratory bird breeding season, Barrick would have a qualified wildlife biologist survey areas proposed for disturbance for the presence of active nests within 7 days prior to disturbance. If active nests are located, the area would be avoided and buffer zones would be established in consultation with BLM to prevent destruction or disturbance of nests until the birds are no longer present.	Impacts would be the same as the Proposed Action, except for the permanent loss of approximately 325 fewer acres of potentially suitable migratory bird breeding, roosting, and foraging habitat compared to the Proposed Action.	Impacts would be the same as the Proposed Action, except for the permanent loss of approximately 104 fewer acres of potentially suitable migratory bird breeding, roosting, and foraging habitat compared to the Reconfiguration Alternative.
Special Status Species			
Impacts to greater sage-grouse Priority Habitat Management Areas (PHMA), General Habitat Management Areas (GHMA), and Other Habitat Management Areas (OHMA)	Potential direct impacts would include the long-term loss of approximately 1,156 acres of PHMA, 1,577 acres of GHMA, and 1,571 acres of OHMA.	Potential direct impacts would include the long-term loss of approximately 704 acres of PHMA, 1,301 acres of GHMA, and 1,548 acres of OHMA.	Potential direct impacts would include the long-term loss of approximately 704 acres of PHMA, 1,127 acres of GHMA, and 1,323 acres of OHMA.
Impacts to greater sage-grouse leks	Nine active leks and seven leks of unknown status occur within the vicinity of the study area. The nearest active lek site occurs approximately 0.8 mile from a proposed disturbance footprint. As a	Under this Alternative, the nearest active lek site occurs approximately 0.8 mile from a proposed disturbance footprint. Therefore, no removal of greater sage-grouse lek sites would	Impacts would be the same as under the Reconfiguration Alternative with the exception of potential impacts to GHMA located at South Water Canyon Seep and

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
	result, no removal of greater sage-grouse lek sites would be anticipated from project activities. Impacts to breeding greater sage-grouse as a result of noise from project activities may include avoidance or accommodation depending upon the intensity and frequency of disturbance. Of the nine active leks, six leks are within 3 miles of existing disturbance areas. Results of ambient noise monitoring indicate that modeled noise levels would exceed the current recommended threshold of 10 dBA above ambient noise threshold at 8 of 9 leks within the project vicinity. Groundwater pumping for the mine could impact (reduce) the baseflow and associated wetland habitats at South Water Canyon Seep and JBR No. 14 Spring in the NOA. These areas are designated as greater sage-grouse GHMA and would be accounted for through the purchase of Nevada Conservation Credits agreed to by BLM and Barrick (**Appendix A**). No drawdown impacts to greater sage-grouse habitat are anticipated within the SOA under the Proposed Action.	occur. Impacts to breeding greater sage-grouse as a result of noise from project activities would be reduced compared to the Proposed Action under this alternative. To minimize potential impacts to greater sage-grouse leks near the NOA from noise resulting from mining activity, the Royale North facilities and the north-south haul road from the Poker Flats area to the Royale area would not be constructed. This modification would result in an increase of 3,770 feet in distance from the nearest mining activity to the Blue Jay Road Lek in comparison to the Proposed Alternative. In addition, existing/authorized and proposed HLFs within the Alligator Ridge and Vantage areas within the proposed SOA would be eliminated under the Reconfiguration Alternative to minimize disturbance to greater sage-grouse leks and associated PHMA and GHMA in the vicinity of the SOA. The proposed Gator HLF and associated process facilities also would not be constructed under this Alternative, which would result in 358 fewer acres of habitat disturbance in comparison to the Proposed Action. Groundwater pumping under the Reconfiguration Alternative would have similar impacts to baseflow and	JBR No. 14. Under the WRM Alternative no impacts to baseflows at these springs are anticipated due to reductions in groundwater pumping in comparison to the Proposed Action and Reconfiguration Alternative

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
		associated wetland habitats at the South Water Canyon Seep and JBR No. 14 Spring as the Proposed Action.	
Livestock Grazing			
Loss of forage and impacts to grazing allotments	The Proposed Action would temporarily (20 years) remove approximately 418 AUMs within the Warm Springs grazing allotment, representing a 2 percent decrease of the total available AUMs in the allotment. The permanent loss of 85 AUMs within the Warm Springs grazing allotment would represent a one percent decrease of the active permitted use of 7,709 AUMs. The Proposed Action would temporarily remove approximately 35 AUMs within the Maverick Springs grazing allotment, representing a 2 percent decrease of the total available AUMs in the allotment. The permanent loss of four AUMs within the Maverick Springs grazing allotment would be negligible (less than 1 percent) in comparison to the overall available acreage and AUMs within the allotment. The reduction in AUMs would not affect grazing operations within either the Warm Springs or Maverick Springs allotments.	Approximately 195 AUMs would be temporarily removed within the Warm Springs grazing allotment, representing a 1 percent decrease of the total available AUMs in the allotment. The permanent loss of 60 AUMs within the Warm Springs grazing allotment would be negligible (less than 1 percent) in comparison to the overall available acreage and AUMs in the allotment. This Alternative also would temporarily remove approximately 11 AUMs within the Maverick Springs grazing allotment, representing a 1 percent decrease of the total available AUMs in the allotment. The permanent loss of four AUMs within the Maverick Springs grazing allotment would be negligible (less than 1 percent) in comparison to the overall available acreage and AUMs in the allotment.	Approximately 183 AUMs would be temporarily removed within the Warm Springs grazing allotment, representing a 1 percent decrease of the total available AUMs in the allotment. The permanent loss of 52 AUMs within the Warm Springs grazing allotment would be negligible (less than 1 percent) in comparison to the overall available acreage and AUMs in the allotment. Impacts to the Maverick Springs grazing allotment would be the same as under the Reconfiguration Alternative.
Impacts to livestock water resources	Based on the site conditions and groundwater model predictions, drawdown associated with groundwater pumping for the mine could impact (i.e., reduce) the baseflow and associated	Drawdown effects resulting from mine groundwater pumping would be similar to the Proposed Action.	No impacts to seeps or springs within the study area are anticipated under the WRM Alternative.

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
	wetlands at South Water Canyon Seep and JBR No. 14 Spring in the NOA. The potential impact to the baseflow may affect livestock distribution within portions of the Warms Springs and Maverick Springs grazing allotments.		
Wild Horses			
Loss of available forage due to surface disturbances	Surface disturbance activities would remove approximately 7,072 acres of available forage within the Triple B HMA: 4,332 acres within the proposed NOA and 2,740 acres within the Triple B HMA within the proposed SOA. 1,210 acres of this disturbance would be permanent.	Surface disturbance within the Triple B HMA would remove approximately 5,642 acres: 3,228 acres in the proposed NOA, and 2,414 acres in the proposed SOA. 885 acres of this disturbance would be permanent.	Surface disturbance within the Triple B HMA would remove approximately 5,240 acres, 2,826 acres in the proposed NOA, and 2,414 acres in the proposed SOA. 780 acres of this disturbance would be permanent.
Impacts to available water for horses	Approximately 16 miles of ephemeral streams within the proposed NOA, and approximately 9 miles of ephemeral streams within the proposed SOA would be directly impacted based on the locations of the proposed facility footprints. Based on the site conditions, and model predictions, drawdown associated with groundwater pumping for the mine could impact (i.e., reduce) the baseflow and associated wetlands at South Water Canyon Seep and JBR No. 14 Spring in the NOA. No drawdown impacts are anticipated within the SOA under the Proposed Action.	Approximately 11 miles of ephemeral streams within the proposed NOA, and approximately 7 miles of ephemeral streams within the proposed SOA would be directly impacted based on the locations of the proposed facility footprints. Drawdown effects resulting from mine groundwater pumping would be similar the Proposed Action.	Approximately 9.5 miles of ephemeral streams within the proposed NOA, and approximately 7 miles of ephemeral streams within the proposed SOA would be directly impacted based on the locations of the proposed facility footprints. No impacts to seeps or springs within the study area are anticipated under the WRM Alternative.
Paleontological Resources			
Loss of paleontological resources as a result of surface disturbing activities.	Potential impacts to any paleontological resources from the Proposed Action would be the result of surface disturbing	Impacts would be the same as the Proposed Action except, surface disturbance activities would remove	Effects would be similar to, but slightly reduced from, the Reconfiguration Alternative, as there

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
	activities physically destroying or degrading fossils. However, the likelihood of finding fossils would be considered low. Implementation of surface disturbance activities as a result of proposed development and expansion would remove approximately 7,097 acres: 4,357 acres within the proposed NOA; and approximately 2,740 acres within the proposed SOA.	approximately 3,352 fewer acres: 1,103 fewer acres within the NOA , 326 fewer acres within the SOA, and 1,923 acres that were previously authorized but withdrawn, resulting in a lower risk of encountering significant paleontological resources compared to the Proposed Action.	would be 636 fewer acres of proposed surface disturbance within the proposed NOA.
Cultural Resources			
Historic, prehistoric, or multi-component site disturbance.	A total of 596 sites are located within currently proposed disturbance areas including 446 prehistoric sites, 82 historic sites and 68 multi-component sites. Of the 96 sites that have received concurrence, 64 are eligible for the NRHP, 429 are not eligible, 3 remain unevaluated, 10 have been mitigated, 13 could not be relocated, and 77 sites have been destroyed by previous disturbance.	A total of 472 sites are located within currently proposed disturbance areas including 356 prehistoric sites, 63 historic sites, and 53 multi-component sites. Of the 472 sites that have received concurrence, 54 are eligible for the NRHP, 323 are not eligible, 2 remain unevaluated, 9 have been mitigated, 7 could not be relocated, and 77 sites have been destroyed by previous disturbance.	A total of 465 sites are located within currently proposed disturbance areas including 355 prehistoric sites, 61 historic sites, and 49 multi-component sites. Of the 465 sites that have received concurrence, 54 are eligible for the NRHP, 316 are not eligible, 2 remain unevaluated, 9 have been mitigated, 7 could not be relocated, and 77 sites have been destroyed by previous disturbance.
Indirect impacts to cultural resources	Potential indirect effects could include changes in erosion patterns caused by construction, soil compaction, or vegetation removal, and vandalism, inadvertent damage, and/or illegal artifact collection due to increased numbers of people in the study area.	Impacts would be the same as the Proposed Action.	Impacts would be the same as the Proposed Action.
Visualand auditory effects to cultural resource setting	There would be potential visual effects to the setting of the Pony Express National Historic Trail, Ruby Valley Pony Express Station, Fort Ruby National Historic Landmark, and Sunshine Locality National	The potential visual effects to the Pony Express National Historic Trail (KOP-2), the Fort Ruby National Historic Landmark (KOP-8), and the Ruby Valley Pony Express Station	Impacts are anticipated to be similar to the Reconfiguration Alternative but reduced in scope. Reduction of Redbird RDA and Pit footprints would further reduce visual effects

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
	Register District. In addition, the Proposed Action would increase the amount of visual contrast that currently exists between the existing/authorized facilities and the natural character of the landscape. At the Pony Express National Historic Trail, Ruby Valley Pony Express Station, and Fort Ruby National Historic Landmark, noise levels are estimated to range from 31 to 38 dBA during construction and 23 to 28.5 dBA during operations. Noise levels at the Sunshine Locality National Register District are estimated at 28 dBA during construction and 20 dBA during operations. Operational noise and other effects would remain for a 20-year project duration.	(KOP-9) would be reduced substantially as compared to the Proposed Action. This is due to the removal in the NOA of the Royale Pit, Royale North RDA, Royale South RDA, Winrock HLF, Winrock Process Area, and associated ancillary facilities, which would have been visible from KOP-2, KOP-8, and KOP-9. Potential visual effects to the setting of the Sunshine Locality National Historic District (KOP-7) would be reduced from minor to negligible due to the removal of the Gator HLF, Gator Process Area, and associated ancillary facilities. All other visual effects associated with this alternative would be similar to the Proposed Action. At the Pony Express National Historic Trail, Ruby Valley Pony Express Station, and Fort Ruby National Historic Landmark, noise levels are estimated to range from 29 to 32 dBA during construction and 20 to 22.5 dBA during operations. Noise levels at the Sunshine Locality National Register District would be the same as the Proposed Action. Operational noise and other effects would remain for a 10-year project duration.	to the Pony Express National Historic Trail., Noise effects would remain similar.
Native American Traditional Values			
Impacts to Native American Traditional Values	To date, no properties of traditional religious and cultural importance to the	Groundwater drawdown impacts would be similar to those experienced	No impacts to seeps or springs within the study area are anticipated

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
	tribes have been identified within the proposed NOA and SOA through tribal consultation or cultural resource inventory. Tribal consultation remains ongoing and would continue through completion. Drawdown effects resulting from mine groundwater pumping under the Proposed Action are anticipated to occur within the NOA at South Water Canyon and JBR No. 14 springs. No drawdown impacts are anticipated within the SOA under the Proposed Action.	under the Proposed Action.	under the WRM Alternative.
Air Quality			
Impacts to air quality	Mining activity would result in an increase in air emissions throughout the life of the project. A modeling analysis has determined that impacts would be below the applicable NAAQS for all of the pollutants and averaging periods. Air emissions, including point and fugitive sources, would be controlled in accordance with the air quality operating permits for the proposed NOA and SOA projects and with present BMPs. There would be no impacts to PSD Class I areas. The combined hazardous air pollutant (HAP) emissions would be less than the major source limit of 25 tons per year and no individual HAP emission would exceed 10 tons per year; therefore the Proposed Action would not constitute a major HAP source.	Operation levels would be similar to the Proposed Action, but with a reduced life of mine of 10 years compared with 20 years for the Proposed Action. Emissions during the period of operation would be similar to the Proposed Action. Accordingly, potential impacts to air quality during operation would be the same as described for the Proposed Action.	Impacts would be the same as the Reconfiguration Alternative.

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
	The Proposed Action has the potential to emit 0.04 ton (84 pounds) of fugitive mercury emissions per year. This represents 2.1 percent of the global background mercury deposition for the area. The contribution of mercury emissions from the Bald Mountain Mine to watersheds more distant from the mine than these three areas would be 0.2 percent of background, or less.		
Land Use and Access			
Land Use	Approximately 7,097 acres of public and private lands would be converted to mining activities. Approximately 1,210 acres associated with pits and pit backfill areas would not be reclaimed. The Proposed Action would comply with adopted governmental plans and policies.	Impacts would be the same as the Proposed Action, except there would be 3,352 fewer acres of surface disturbance that would be converted to mining activities.	Impacts would be similar to, but slightly reduced from, the Reconfiguration Alternative, as there would be 636 fewer acres of proposed surface disturbance within the NOA.
Access	The Proposed Action would result in a slight increase in traffic to and from the project site over current levels. Haul road traffic may increase by 20 percent, but no more that 30 percent at various points within the life of the project. Surface disturbance (7,097 acres) would reduce the amount of land available for livestock grazing and dispersed recreation, although the loss would be very small relative to the overall area, particularly considering the limited current use levels.	Impacts would be similar to the Proposed Action, except that impacts would be reduced from 20 to 10 years in duration and there would be 3,352 fewer acres of surface disturbance to land available for livestock grazing and dispersed recreation.	Impacts would be similar to those described for the Reconfiguration Alternative, except some haul roads would have restrictions on truck traffic to benefit mule deer.

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
Recreation			
Impacts to recreation	Approximately 7,097 acres (4,357 acres in the NOA and 2,740 acres in the SOA) of public and private land would be removed from public access for recreation for the life of the project. Extensive public land in the immediate area would accommodate dispersed recreational uses. All project components would be reclaimed with the exception of pits and pit backfilled areas, representing a permanent loss of 863 acres in the NOA and 347 acres in the SOA. Mule deer hunting and viewing opportunities could be potentially reduced due to development of mine facilities within mule deer migration areas. Mine development would leave few undisturbed areas for mule deer moving north and south through the east and west side of the proposed NOA project. This would essentially remove the majority of remaining undisturbed “continuous corridors” for mule deer annual migration.	Effects on recreation would be similar to those described for the Proposed Action, except that reductions to mule deer hunting and viewing opportunities would be minimized as a result of the maintenance of mule deer migration corridors through the mine site and the reduction of the life of mine from 20 to 10 years.	Effects on recreation would be similar to those described for the Reconfiguration Alternative, except that reductions to mule deer hunting and viewing opportunities may be further minimized as a result of wider deer migration corridors, additional traffic restrictions, and maintenance of snow routes for deer.
Social and Economic Values			
Employment and income	Total employment, at peak, would increase by 332 additional workers over current levels (450 existing workers), including contractors. After the end of a construction spike in 2018, total employment would drop by over 100 and continue at approximately that level, with some variability, through 2024. As a result, unemployment would decrease and income would increase	Total employment, at peak, would increase by 132 (200 fewer workers than the Proposed Action) additional workers over the current levels, including contractors. After the end of a construction spike in 2017, total employment would decline by approximately 200 workers by 2019 and level off at and continue at approximately 366 workers through	Total employment effects would be the same as the Reconfiguration Alternative, except that for the NOA, there would be a reduction in the maximum number of employees from 511 to 498 (in 2017)

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
	leading to additional local revenue.	2022 before declining to 66 workers in 2024 when operations end. Unemployment would decrease, but less so than under the Proposed Action. Likewise, income would increase leading to additional local revenue; however, the increase would be slightly less than under the Proposed Action.	
Population and housing	The population increase is estimated to be between approximately 281 (0.5 percent of the 2010 population of the three counties) and 435 people (0.7 percent of the 2010 population of the study area). In either case, the population effect of the Proposed Action would be expected to be modest. A maximum of 200 contract construction workers is expected to be needed for the proposed project. Assuming most construction workers would be hired from the local labor force, they would not affect the housing market to any substantial degree. If substantial numbers of the anticipated contractor work force were brought in from outside the area, then there is an ample supply of temporary housing.	Population effects would be less than the impacts described for the Proposed Action as fewer workers would be hired under this alternative. Similar to the Proposed Action, a maximum of 200 contract construction workers are expected to be needed under this Alternative. Assuming most construction workers would be hired from the local labor force, they would not affect the housing market to any substantial degree.	Population and housing effects would be similar to, but slightly reduced from, the impacts described for the Reconfiguration Alternative due to a slight reduction in employees in the NOA in 2017.
Community facilities and community services	No significant capacity or service issues have been identified for public facilities or services in the three-county study area. School enrollment would increase by between 52 and 80 students under the estimated average and peak population growth scenarios. At these levels of	No significant capacity or service issues have been identified for public facilities or services in the three-county study area. School enrollment would not materially change from existing conditions based on the projected	Impacts would be the same as the Reconfiguration Alternative.

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
	increase, the effects would be minor and should not adversely affect district schools.	employment at the mine for operations under this Alternative.	
Public finance	Construction of the mine would have a major, positive, short-term fiscal effect on the entities within the affected area, and operation and maintenance of the mine would have a long-term, major, positive fiscal effect. These effects would cease at the time the proposed mines were closed and abandoned.	Impacts would be the same as the Proposed Action, except these effects would be shorter in duration under this alternative than the Proposed Action due to the shorter mine life (10 years) compared with 20 years for the Proposed Action. These effects would cease at the time the mines were closed and abandoned.	Impacts would be similar to the Reconfiguration Alternative.
Hunting Related Economics	Impacts to the local mule deer herd and revenue from hunting related activity could be reduced under the Proposed Action. Because it is not possible to accurately quantify changes in the local deer herd population from the Proposed Action, the resulting specific economic effects are similarly difficult to accurately quantify. However, employing the general deer hunting-related economic assumptions from recent years, noted above, an estimate of a range of socioeconomic impacts can be made based on potential incremental population fluctuations in deer populations. For example, if it is assumed that the Proposed Action would adversely affect the deer herd to the extent that Management Area 10 hunt tags would be reduced by 10 percent, the effect on hunting expenditures would be a reduction of approximately $2.5 million, or 2.7 percent of 2011 statewide big game	Impacts from reductions in hunting-related revenue would be shorter in duration than the Proposed Action due to the shorter mine life of 10 years. The use of multiple undisturbed mule deer migration corridors to reduce population impacts to the Management Area 10 deer herd could be expected to have reduced economic effects from potential reductions in Management Area 10 hunt tags allocated annually by NDOW. If it is assumed that the Reconfiguration Alternative would adversely affect the deer herd to the extent that Management Area 10 hunt tags would be reduced by 5 percent, the effect on hunting expenditures would be a reduction of up to approximately $1.25 million or 1.35 percent of the 2011 statewide big game hunting expenditures. State and	Effects on hunting related revenue would be similar to those described for the Reconfiguration Alternative, except that reductions to mule deer hunting opportunities may be minimized as a result of measures designed to benefit mule deer (wider deer migration corridors, additional traffic restrictions, and maintenance of snow routes for deer).

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
	hunting expenditures. State and local tax revenues would be reduced by approximately $203,000 statewide.	local tax revenues would be reduced by up to approximately $101,500 statewide.	
Environmental Justice			
Impacts relating to environmental justice	No disproportionate, adverse environmental justice effects would be anticipated from the proposed project.	Impacts would be the same as the Proposed Action.	Impacts would be the same as the Proposed Action.
Visual Resources			
Impacts to visual resources	There would be an increase in the amount of visual contrast that currently exists between existing/authorized facilities and the natural character of the landscape. The primary change in visual effects from the currently approved levels would be the addition of the RDAs, HLFs, open pits, process areas, structures, and ancillary facilities. The Proposed Action also would extend visual effects through the increased use of the area and proposed mining activity. The Royale East RDA would reach the skyline in the views from KOP-2, KOP-8, and KOP-9. It is expected that the proposed facility would not achieve the requisite “moderate” level of landscape change in the short term - during active mining - for VRM Class III areas. Visual contrast from the facility would be reduced after reclamation; however, the long-term visual effects as viewed from KOP-2 and KOP-3 would not achieve VRM Class III objectives unless the planar form of the RDA is reshaped to repeat the angular ridgelines in the background. The mining activities in view of KOPs 1, 4,	The impacts to viewers at KOP-2, KOP-8, and KOP-9 would be reduced substantially as compared to the Proposed Action due to the removal in the NOA of the Royale Pit, Royale North RDA, Royale South RDA, North Poker Flats HLF, Winrock HLF, Winrock Process Area, and associated ancillary facilities. In addition, impacts to viewers at KOP-3, KOP-5, KOP-6, and KOP-7 would be lessened as well. The mining activities visible from all KOPs would meet VRM Class objectives. All other impacts to visual resources would be similar to the Proposed Action.	Impacts would be the same as the Reconfigurations Alternative, except that the impacts to viewers at KOP-1 would be reduced due to the reduction of the Redbird RDA and Pit footprints.

Table 2.10-1 Comparison between Proposed Action and Project Alternatives

Potential Impact	Proposed Action	Reconfiguration Alternative	WRM Alternative (Agency Preferred Alternative)
	5, 6, and 7 would meet VRM Class IV objectives.		
Hazardous Materials and Solid Waste			
Storage and use	Operations would be conducted in accordance with the Spill Contingency and Emergency Response plans, which would ensure that impacts from potential spills would be minimized and the spill materials contained and removed.	Impacts would be the same as the Proposed Action.	Impacts would be the same as the Proposed Action.
Transportation	There is a low probability of an accidental release of hazardous materials to the environment during the estimated life of the Proposed Action. Additionally, based on the small quantities of hazardous waste that would be generated, there is a very low risk of adverse effects on the natural environment or human health and safety.	The mine life is 10 years for this Alternative compared with 20 years for the Proposed Action. As a result, the amount of hazardous materials and waste generated for this alternative would be approximately half of the Proposed Action over the life of the mine. The number of hazardous materials shipments, miles traveled, and calculated number of incidents over the mine life would be expected to be reduced by approximately half compared with the Proposed Action.	Impacts would be the same as the Reconfiguration Alternative.