

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION AND BACKGROUND

This chapter describes Newmont's existing mining operations in the Genesis-Bluestar Operations Area authorized under BLM NVN-70712 and NDEP Permit 0096 (the No Action Alternative), and the currently proposed amendment to the Genesis-Bluestar Plan of Operations. The proposed amendment is referred to as the Genesis Project (Project) or the Proposed Action in this document.

Analysis to date has not found any substantive resource impact for which an alternative would be practical or appropriate. To date, neither the BLM, cooperating agencies nor any public comment has identified an alternative that might address/reduce/obviate any potential impact of the Proposed Action. If an alternative is proposed that is feasible and addresses a substantive impact in a meaningful way, the BLM will analyze that alternative. Therefore, the only alternative discussed in detail in this EIS is the No Action Alternative. Under the No Action Alternative, BLM would deny Newmont's proposal to amend the Genesis-Bluestar Plan of Operations. Existing operations in the Genesis-Bluestar Operations Area would continue in accordance with authorizations provided under BLM NVN-70712 and NDEP Permit 0096.

This chapter also provides a comparison of the No Action and Proposed Action alternative, presents alternatives considered but eliminated from detailed analysis, and identifies the agency's preferred alternative.

The proposed Genesis Project would be located within Newmont's Genesis-Bluestar Operations Area in Sections 25 and 36, Township 36 North, Range 49 East, Sections 30, 31, and 32, Township 36 North, Range 50 East, and Sections 3, 4, and 5, Township 35 North, Range 50 East, Mount Diablo Baseline and Meridian. Surface ownership is shown on **Figure 2-1**.

The proposed Genesis Project is located along the western side of the Tuscarora Mountains within the Boulder Flat hydrographic area. North-trending mountain ranges bound intervening basins partially filled with alluvium and colluvium from adjacent slopes. The Tuscarora Mountains drainage divide forms the boundary between the Maggie Creek basin on the east and Boulder Creek basin on the west. In the general Project area, elevations range from about 7000 feet above mean sea level (amsl) in the mountains to about 4900 feet amsl at the bottom of the existing Genesis pit.

The Bluestar Mine was developed between 1971 and 1974, and milling of ore from the mine commenced in 1975. In 1989, Newmont received approval to continue exploration and drilling throughout the Genesis-Bluestar Operations Area, continue mining the existing Genesis and Bluestar open pit mines, expand the existing Section 5 Waste Rock Disposal Facility, and construct the North Waste Rock Disposal Facility (BLM 1989). In 1995, Newmont received authorization to construct the Section 36 Waste Rock Disposal Facility, expand the Section 5 Waste Rock Disposal Facility vertically, develop and operate five open pit mines (Sold, Beast, North Star, Payraise, and Bobcat), and continue exploration activities (BLM 1995).

2.2 NO ACTION ALTERNATIVE

The No Action Alternative represents the existing site conditions, including past and ongoing mining, inside the Genesis-Bluestar Operations Area. Under the No Action Alternative, mining will be completed in 2010. Reclamation activities will continue for several years thereafter.

2.2.1 EXISTING OPERATIONS

Mining operations in the Genesis-Bluestar Operations Area were authorized under BLM NVN-70712 and NDEP Permit 0096. Development and operation of the Genesis-Bluestar Mine began in the early 1970s on private land owned by Newmont. Subsequent authorizations by NDEP and BLM allowed Newmont to expand mining operations on private and public land (BLM 1989), develop new ore bodies, and construct additional waste rock disposal facilities and haul roads (BLM 1995). Under these existing authorizations, mining in the Genesis-Bluestar area will continue into 2010. Existing operations are shown on **Figure 2-2**.

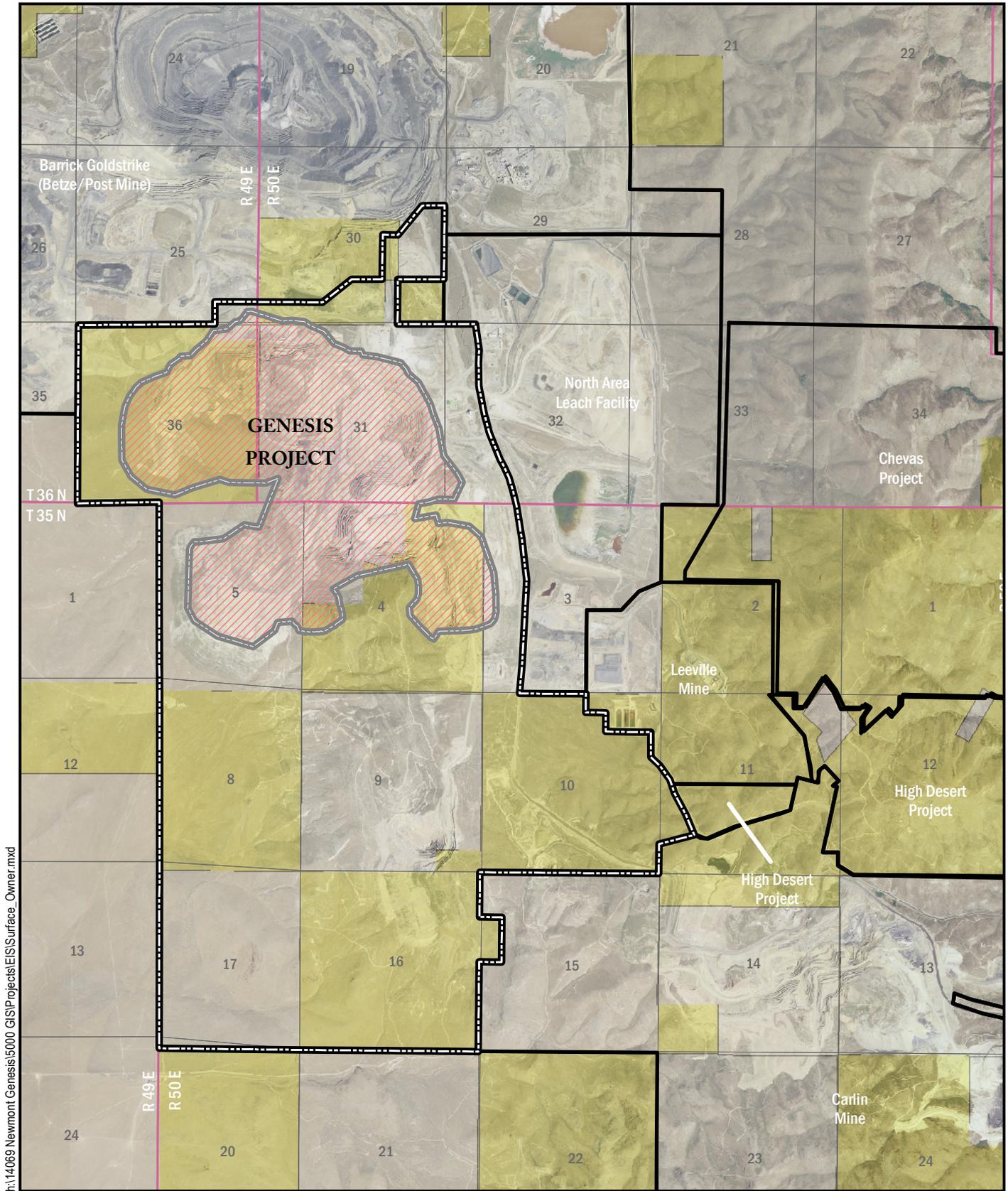
2.2.1.1 Mine Pits

Since mining operations in the Genesis-Bluestar Operations Area began, Newmont has developed seven mine pits. The Genesis and Bluestar pits were developed in the early 1970s. Information concerning ore and waste rock production prior to 1989 is not available for the Genesis and Bluestar mines. During the period 1989 through 1993, about 115 million tons (Mt) of ore and waste rock were mined from the two pits (BLM 1995). In June 1994, Newmont submitted an amendment to the Genesis-Bluestar Plan of Operations to develop five additional pits (Sold, Beast, Payraise, North Star, and Bobcat) totaling approximately 400 acres. The amendment was authorized in a Decision Record issued in February 1995.

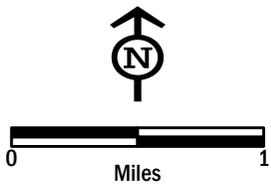
The Sold, Beast, North Star, and Bobcat pits were mined during the period of 1995 to 2005 and generated about 74Mt of ore and over 200Mt of waste rock. During this period the Genesis and Bluestar pits were expanded to become one pit. The Bluestar portion was mined to a depth of 5320 feet amsl and the Genesis portion to a depth of 4980 feet amsl. The Beast Pit was mined to a depth of 5540 feet amsl and eventually expanded to incorporate the Sold Pit. The Payraise Pit has not been mined as of the date of this document. Due to the low grade of ore Newmont is uncertain as to when or if the deposit will be mined. The mine would encompass 31 acres, 22 of which have been previously disturbed by exploration activity.

By 2005, mining operations in the Genesis-Bluestar area were beginning to decline as ore reserves were depleted and gold prices remained stagnant. Exploration operations to define deeper reserves continued.

Current operations include mining of the Bobcat and a small portion of the Genesis-Bluestar pit. Waste rock from these operations is being placed in the Section 36 Waste Rock Disposal Facility. Oxide ore produced from these mine pits is hauled to Newmont's North Area Leach Facility. Mining in the Sold Pit will continue into 2010. Waste rock from the Sold Pit is used as backfill for underground operations at the Leeville Project.

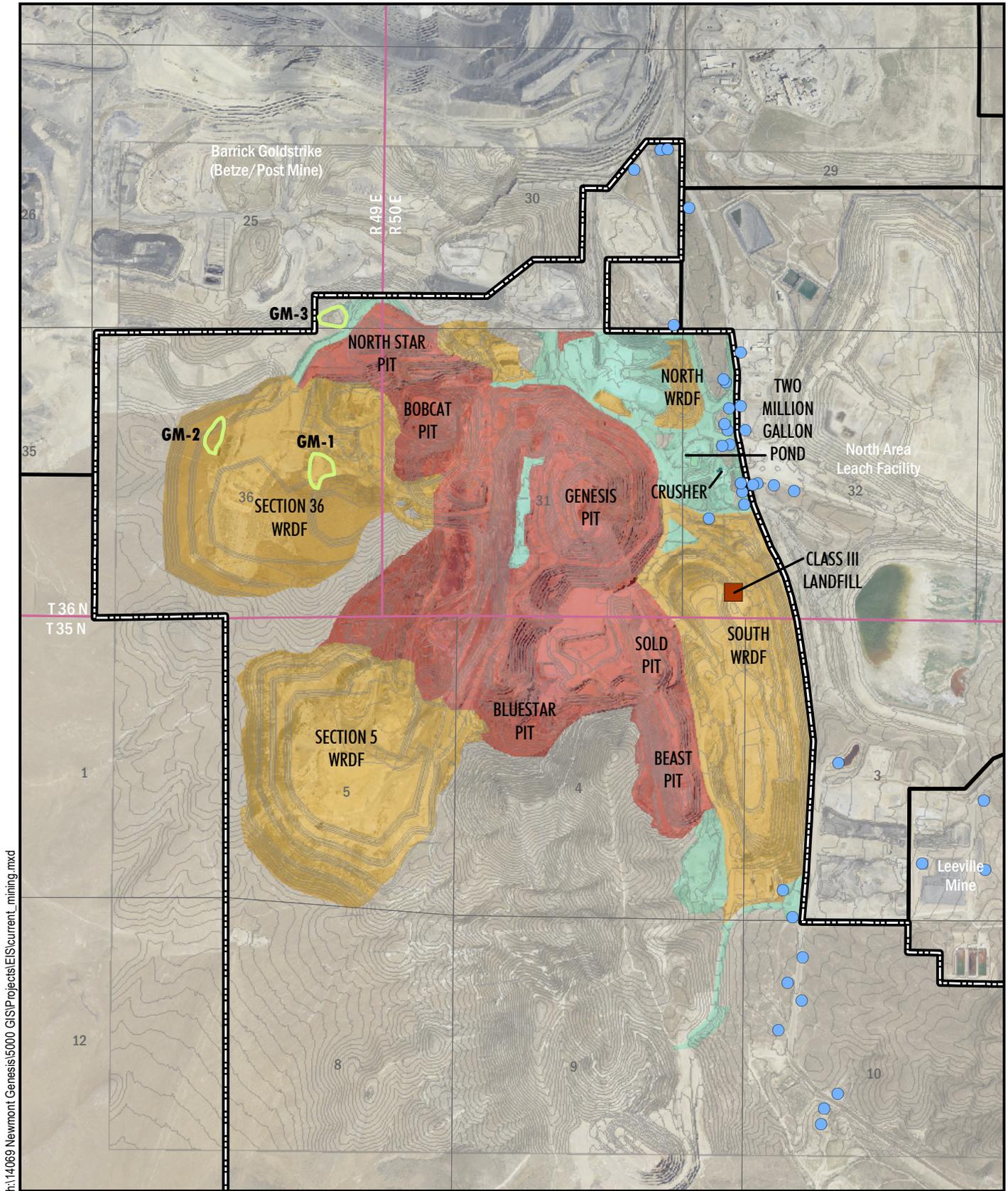


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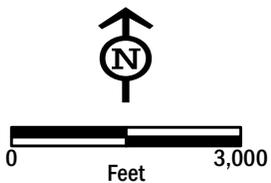


- | | | | |
|---|----------------------------------|---|-------------|
|  | Genesis-Bluestar Operations Area |  | Public Land |
|  | Genesis Project |  | Private |
|  | Township/Range | | |

Surface Ownership
Genesis Project
 Eureka County, Nevada
FIGURE 2-1



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- | | | |
|----------------------------------|--------------------------|--------------|
| Existing Mine Disturbance | | |
| Genesis-Bluestar Operations Area | Ancillary Facility | Growth Media |
| Township/Range | Mine Pit | Stockpile |
| Sections | Waste Rock | |
| Existing Stormwater Facilities | Disposal Facility (WRDF) | |

**Current Mining Operations
Genesis Project
Eureka County, Nevada
FIGURE 2-2**

Under existing authorizations, approximately 450 acres of mine pits (Genesis, Bluestar, Sold, Beast, North Star, and Bobcat) would remain as open pits at closure (BLM 1989, 1995). The Genesis portion of the Genesis-Bluestar Pit was the only pit mined to a level below the pre-dewatering groundwater level (5265 feet amsl). The Genesis Pit lies within the groundwater drawdown area from ongoing dewatering activities at Barrick's nearby Betze/Post Mine and Newmont's Leeville Project.

Dewatering activities at these facilities are currently predicted to end about 2018. Due to the lag time of rebounding groundwater, approximately 100 years would elapse before groundwater will intersect and inflow to the Genesis Pit. Groundwater inflow to the pit is projected to be about 90 percent complete by 2350. Final predicted pit lake elevation of 5225 feet amsl is estimated to occur about 400 years after cessation of dewatering activities, and the pit lake would have a surface area of about 41 acres (Geomega 2008a).

If the No Action Alternative is selected by BLM, or Newmont decides to forego development of the Genesis Project, NDEP may require an updated pit lake model be compiled for the Genesis Pit lake that would form under the current Plan of Operations authorization. NDEP would make the determination as part of Newmont's Water Pollution Control permit issued for the North Area Leach Facility. With each subsequent application for renewal of the Water Pollution Control Permit or operational or facility change that could affect the Genesis Pit lake predictive model, Newmont would be required to update and re-evaluate the model. Any update or modification would include: 1) all new data developed during the period elapsed since the date of the previous submittal; 2) an update of the most likely scenario or alternative; and 3) as applicable, revised conclusions and recommendations based on current NACs and best engineering and scientific principles and practices. As part of their review of the updated pit lake model, NDEP may require an Ecological Risk Assessment be completed to assess potential effects pit lake water quality may have on wildlife.

2.2.1.2 Ore Processing

Low grade oxide ore from the Genesis-Bluestar Operations Area is currently processed at the North Area Leach Facility (NDEP Permit No. 0176), while high grade and refractory ore are processed at Newmont's Mill 5/6 (NDEP Permit No. 0096). Mill 5/6 is located in the South Operations Area, approximately six miles north of Carlin.

To date, approximately 130Mt of ore from the Genesis-Bluestar Operations Area have been placed on the North Area Leach Facility. Leach-grade ore is hauled from the mine to a crushing facility for size reduction and agglomeration with cement prior to being placed on the leach pad, although some ore is placed directly on the leach pad. The ore is leached with a low-concentration cyanide solution that is collected and passed through columns of activated carbon. Gold is recovered from the cyanide solution in the carbon columns. Barren cyanide solution (solution where the gold has been removed by carbon) is returned for re-use in the leaching process. The carbon handling and refining occurs at Newmont's Mill 5/6 in the South Operations Area. Approximately 9.2Mt of oxide/refractory ore from the Genesis-Bluestar Operations Area has also been processed at Newmont's Mill 5/6. The treatment process involves primary crushing, semi-autogenous grinding, and cyanide leaching with gold recovery by carbon-in-leach and carbon-in-column circuits.

Approximately 520,000 tons of oxide mill ore and 2,400 tons of refractory ore from the Genesis-Bluestar Operations Area were processed at Mills 5 and 6 respectively, in 2007. No oxide or refractory ore from the Genesis-Bluestar Operations Area was processed at these mills during 2008.

2.2.1.3 Waste Rock Disposal

Four waste rock disposal facilities were constructed in the Genesis-Bluestar Operations Area. The North and South Waste Rock Disposal facilities are no longer in use and are being reclaimed. Active deposition of waste rock is occurring in the Section 36 Waste Rock Disposal Facility. The Section 5 Waste Rock Disposal Facility is currently inactive and scheduled for reclamation, but would be expanded vertically under the Proposed Action.

Section 5 Waste Rock Disposal Facility

The Section 5 Waste Rock Disposal Facility is permitted for a surface disturbance of 340 acres. The existing facility was constructed at an elevation beginning at 5580 feet amsl extending to a maximum height of 5800 feet amsl. Overall dimensions of the facility are approximately 4,500 feet long by 3,200 feet wide. The lower-most lifts of waste rock in the Section 5 Waste Rock Disposal Facility have been reclaimed. To date, approximately 121Mt of waste rock (including 24.6Mt of PAG rock) have been placed in the facility.

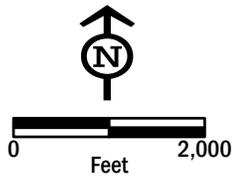
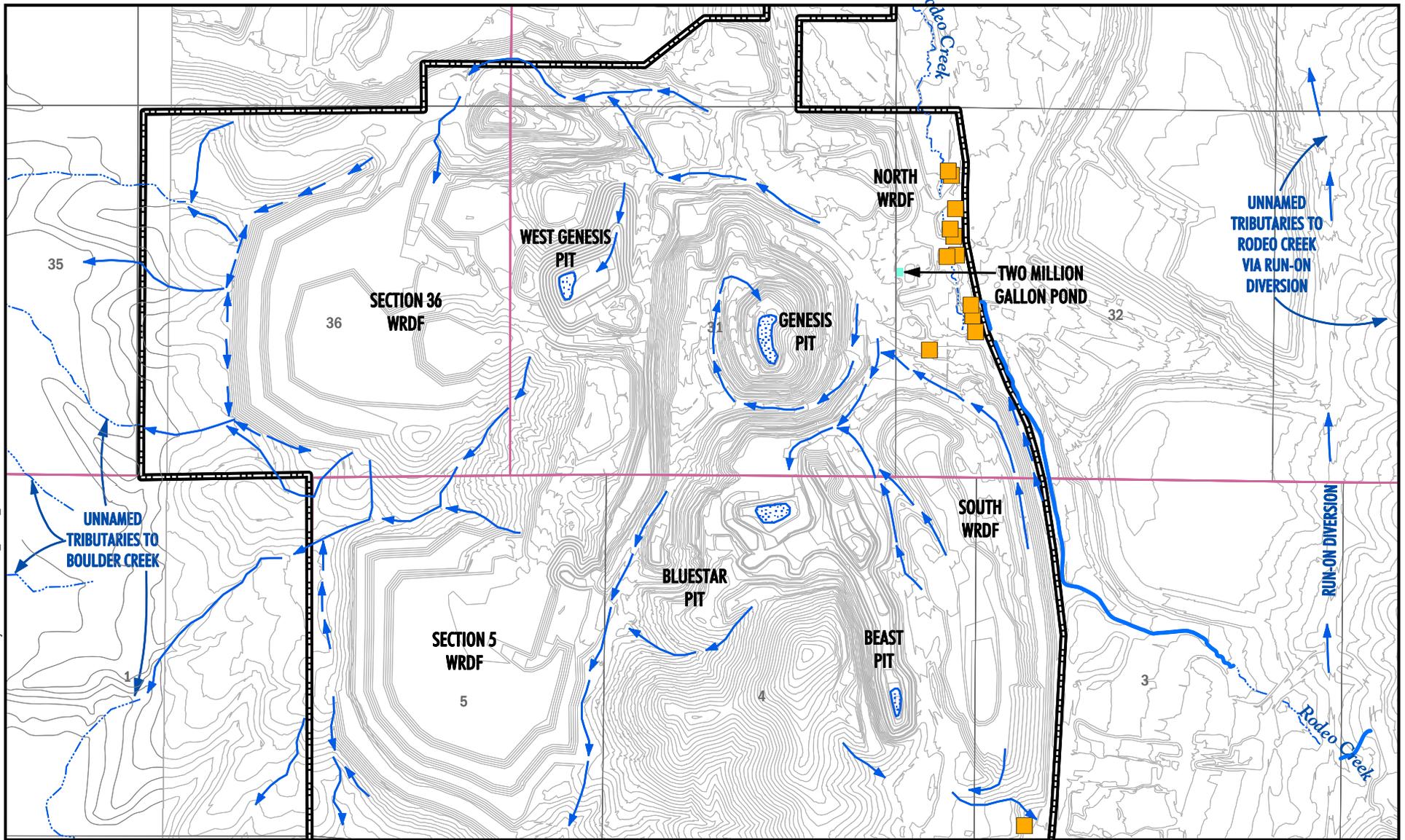
Section 36 Waste Rock Disposal Facility

The Section 36 Waste Rock Disposal Facility was constructed in accordance with the Plan of Operations Amendment, Blue Star Operations Area for the Section 36 Project Open Pit Mines and Waste Rock Disposal Facilities (Newmont 1994) and previously permitted for 330 acres with an average height of 220 feet (BLM 1995). Dimensions of the facility are approximately 4,800 feet in length by 4,200 feet in width. Toe elevation of the facility is approximately 5460 feet amsl. The Section 36 Waste Rock Disposal Facility is currently permitted to accept 103Mt of waste rock, including a PAG waste rock encapsulation cell; however, the PAG cell has not been constructed as of the date of this document. To date, approximately 42.6Mt of non-PAG waste rock has been placed in the facility.

2.2.1.4 Surface Water Control Structures

Surface water diversion channels and ditches have been constructed as necessary around surface facilities, mine pits, and waste rock disposal facilities to control storm water run-on to these sites (**Figure 2-3**). Surface water control ditches and sediment retention ponds have been constructed in accordance with Best Management Practices (BMPs) as outlined in the Handbook of Best Management Practices (Nevada State Conservation Commission 1994) and Newmont's Storm Water Pollution Prevention Plan. Sediment ponds and diversion ditches are sized to contain a 100-year/24-hour precipitation event of 2.8 inches. Run-on diversion channels and ditches will remain as permanent features after final reclamation and mine closure.

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- Genesis-Bluestar Operations Area
- Existing Storm Water Control Ponds
- Township/Range
- Sections
- Diversion Channel
- Ephemeral Drainage
- Flow Direction of Surface Runoff
- Seasonal Poned Areas

Surface Water Control Structures
Genesis Project
Eureka County, Nevada
FIGURE 2-3

Run-off control structures include silt traps and fences constructed of certified weed free straw, hay bales, or geotextile fabric, and sediment ponds. Sediment control measures are implemented, as necessary, to reduce soil movement within the site and to minimize off-site effects. These structures will be maintained throughout the life of the Project. Soil collected in these structures is periodically removed and placed in soil stockpiles or used for reclamation. These features will be removed once vegetation is established and sediment run-off has stabilized.

2.2.1.5 Reclamation

Currently, 245 acres within the Genesis Project area are undergoing reclamation. Examples of these reclamation efforts on the South Waste Rock Disposal Facility and the Section 5 Waste Rock Disposal Facility are shown on **Figures 2-4** and **2-5**.

As indicated previously, current mining operations in the Genesis-Bluestar Operations Area are projected to be completed in 2010. Reclamation of disturbed areas associated with these operations will commence in accordance with approved plans authorized under BLM NVN-70712 and NDEP Permit 0096. These approved plans detail reclamation for mine pits, waste rock disposal facilities, haul and access roads, exploration activities, and other ancillary facilities. Examples of reclamation efforts completed to date in the Genesis-Bluestar Operations Area are shown on **Figures 2-4** and **2-5**.

Objectives of the reclamation plans are to establish post-mining land uses including wildlife habitat, livestock grazing, and dispersed recreation. Reclamation plans were developed to promote public safety, minimize adverse visual effects, and re-establish stable topographic features that will support a diverse, self-sustaining vegetative community.

Primary closure and reclamation measures include:

- Re-distribution of salvaged growth media;
- Berming and signing open pits to limit access;
- Regrading disturbed areas to establish stable slopes and drainage patterns; and
- Revegetation with an approved seed mix.

Mine Pits

Approximately 450 acres of mine pits (Genesis, Bluestar, Sold, Beast, North Star, and Bobcat) will remain as open pits under Newmont's existing operating permit (BLM 1989, 1995). A pit lake (ultimately 41 acres at full pool) will begin to develop in the Genesis Pit approximately 100 years after cessation of regional dewatering activities currently predicted to end about 2018 (Geomega 2008a). A computer generated graphic depicting the approximate footprint and topographic relief of mine pits at the completion of existing authorizations is shown on **Figure 2-6**.

Public access to pit areas will be restricted by construction of earthen berms to deter accidental access. Earthen berms will be constructed at locations shown on **Figure 2-7**. Warning signs will also be installed around the perimeter to identify potential hazards related to pit highwalls or open excavations. Spacing of signs will be determined in consultation with BLM and NDEP. A standard BLM fence has been constructed around the permit boundary to prevent livestock from entering active mine areas. The fence will remain in place until reclamation is complete. After bond release, disposition of the fences and warning signs will be at the discretion of the respective landowner(s) or land managing agency.

Growth Media

Following final grading, Newmont would redistribute approximately 622,000 cubic yards (cy) of growth media salvaged from previous mining operations in the area. Final reclaimed contours are shown on **Figure 2-7**. See **Figure 2-2** and **Table 2-1** for the location of stockpiles and quantities. Growth media would be placed up to six inches deep on selected areas and where sufficient fines are available on the surface of areas to be reclaimed, direct seeding would be conducted. Unused growth media will be stockpiled in three locations (see **Figure 2-2**). GM-1 is located in the east-central portion of the Section 36 Waste Rock Disposal Facility (SW/SE/NE quarter of Section 36). GM-2 is located in the western side of the Section 36 Waste Rock Disposal Facility (E $\frac{1}{2}$ /SE/NW quarter of Section 36). GM-3 is located on the northwest corner of the North Star Pit (SW/SE/SW quarter of Section 25).

Growth Media Stockpile	Volume (cy)
GM-1	199,000
GM-2	207,000
GM-3	216,000
TOTAL	622,000

Waste Rock Disposal Facilities

Approved reclamation plans for the Section 5 and Section 36 Waste Rock Disposal facilities include grading to establish final slopes at 2.5 Horizontal (H):1.0 Vertical (V). Grading would be done to minimize erosion, facilitate reclamation activities (e.g., seeding, mulching), and provide a surface to support vegetation.

Haul Roads and Ancillary Facilities

Roads associated with the Genesis-Bluestar Operations Area will be reclaimed concurrently with cessation of operations in individual areas. Roads remaining at the end of mining operations would be reclaimed when no longer needed for reclamation and access.

Haul roads linking mine pits with waste rock disposal areas will be reclaimed concurrently with closure of the respective disposal area. Haul roads not located on the waste rock disposal site will be reclaimed by regrading to provide proper drainage, ripping to reduce compaction, placement of growth media, seed-bed preparation, and seeding. Reclaimed roads will be regraded, to the extent practical, to reestablish original topography and drainage of the site and to control erosion. Culverts will be removed and natural drainage reestablished.

Upon cessation of mining activities, ancillary facilities including the explosives magazine, crusher, and other mine support structures with salvage value will be dismantled for salvage or used for other operations in the area. Concrete foundations will be broken up to the extent possible and buried, or left intact and buried beneath ten feet of fill material. These sites will be reclaimed by regrading to provide proper drainage, ripping to reduce compaction, placement of growth media, seedbed preparation, and seeding.



Photo No. 1 – Regraded/Recontoured Slopes in Genesis-Bluestar Operations Area



Photo No. 2 - Revegetated Slope in Genesis-Bluestar Operations Area (April 08)

FIGURE 2-4
South Waste Rock Disposal Facility Reclamation
Genesis Project



Plate 1 - Newmont - Section 5 WRDF - 2005 - Typical View Looking North



Plate 2 - Newmont - Section 5 WRDF - 2005 - Typical View Looking South

FIGURE 2-5
Reclamation of Section 5 Waste Rock Disposal Facility
Genesis Project

2.2.1.6 Invasive, Non-native Species

Newmont conducts annual weed surveys to direct weed control efforts. Monitoring weed infestations and weed control are ongoing and will continue until reclamation is complete and potential for weed invasion is minimized. Since 2005, Newmont has treated approximately 5,500 acres for Scotch thistle, salt cedar (tamarisk), and hoary cress. Treatment areas ranged from the Bootstrap Mine in the north to the Rain Mine in the south (Basin Tree Service and Pest Control 2005, 2006, 2007, 2008). There was no treatment for invasive, non-native species in 2008. In 2009, approximately seven acres were treated for whitetop. Future treatment for invasive, non-native species is expected to be similar to previous years.

2.2.1.7 Employment

Newmont currently employs approximately 3,300 people at its operations in eastern Nevada. Of these, about 1,300 workers are employed at surface operations in the Carlin Trend. Most of the work force tasked to the Genesis – Bluestar Operations Area is from Newmont's existing mine-related work forces in the Carlin Trend. Upon completion of current mining and reclamation activities this work force would likely be shifted to other operations coming on line (e.g., Emigrant Project) or a work force reduction would occur.

2.2.2 FUTURE OPERATIONS FROM EXISTING AUTHORIZATIONS

2.2.2.1 Mining Operations

Mining operations that would occur for the remaining mine life under existing authorizations include continued mining of the Bobcat and a small portion of the Genesis-Bluestar pit. Mining in the Sold Pit will continue into 2010. Depending on gold prices, the Payraise Pit could also be developed during this period.

Existing mine pit excavations, conducted under existing authorizations, total approximately 450 acres. When mining under existing authorizations ceases, up to approximately 480 acres of pits will remain.

2.2.2.2 Ore Processing

Oxide ore produced from these mine pits is transported to Newmont's North Area Leach Facility. During the remaining mine life approximately 2.6Mt of run-of-mine oxide ore will be placed on the North Area Leach Facility. Newmont does not anticipate processing any oxide mill or refractory ore during the remaining mine life under authorized operations. Ore processing is described in Section 2.2.1.2 – Ore Processing above.

2.2.2.3 Waste Rock Disposal

Approximately 13Mt of waste rock from mining operations conducted through the remaining mine life under existing authorizations will be placed in the Section 36 Waste Rock Disposal Facility. Waste rock from the Sold Pit is used as backfill for underground operations at the Leeville Project. The Section 36 Waste Rock Disposal Facility is described in Section 2.2.1.3 – Waste Rock Disposal above.

2.2.2.4 Energy Use

Consumption of diesel fuel for ongoing Genesis-Bluestar operations are estimated at 370,000 gallons annually. Electrical power consumption associated with processing oxide leach ore at the North Area Leach Facility is approximately 13,200 megawatt hours (MWh) annually. All other aspects of operations will be similar to that described in Section 2.2.1 - Existing Operation.

2.2.3 AUTHORIZED OPERATIONS WHICH WOULD BE MODIFIED IF THE PROPOSED ACTION IS APPROVED

This section describes how existing authorizations would be impacted by approval of the Proposed Action described in Section 2.3. Modifications include the following:

2.2.3.1 Mine Pits

Approval of the Proposed Action would generate approximately 355Mt of waste rock for use as in-pit backfill of previously mined out pits (see Section 2.3.2 – Mining Operations). Waste rock from expansion of the Genesis Pit would provide in-pit backfill to completely fill the Bluestar and Beast pits. In-pit backfill would also be used to partially fill mined out portions of the Genesis Pit eliminating formation of a pit lake. A net increase of approximately 300 acres of backfilled mine pits would be reclaimed to provide a land surface capable of supporting wildlife habitat and livestock grazing. Approximately 124 acres of highwall (25,000 linear feet) ranging in elevation from 5310 feet amsl to 5850 feet amsl would remain as shown on **Figure 2-7**.

2.2.3.2 Waste Rock Disposal Facilities

Under the Proposed Action, the Section 5 and Section 36 Waste Rock Disposal facilities would be vertically extended approximately 160 feet and 100 feet, respectively (see Section 2.3.5 – Waste Rock Management). No new surface disturbance would be required beyond the current permitted footprint. Newmont would conduct concurrent reclamation activities to the extent practicable. Reclamation would be conducted on facilities or portions of these facilities that have been constructed to design limits. Reclamation of these facilities would be delayed until the end of mining operations and placement of waste rock is completed.

2.2.3.3 Reclamation

Under the Proposed Action, reclamation of existing disturbance, including haul roads and other disturbance within the operations boundary as well as off-site facilities such as the North Area Heap Leach, may be delayed for up to twelve years.

2.2.3.4 Employment

Newmont currently employs approximately 200 workers in the Genesis-Bluestar Operations Area. Rather than be laid off or reassigned to other projects, these workers would continue work at the Genesis Project and be joined by additional workers. An average of 687 workers would be employed during the twelve-year mine life. The proposed Genesis Project would not result in hiring new employees, but would extend the employment of Newmont's existing Carlin work force.

2.3 PROPOSED ACTION

The Proposed Action referred to throughout this EIS is Newmont's proposed amendment (Newmont 2007a) to the Genesis-Bluestar Plan of Operations under BLM authorization NVN - 70712 and NDEP Permit No. 0096. Components of the Proposed Action are shown on **Figure 2-8**.

The Proposed Action includes the following activities:

- Expansion of the existing Genesis Pit (within the existing permitted disturbance area);
- Placement of waste rock generated from expansion of the Genesis Pit as in-pit backfill in the previously depleted Beast, Bluestar, and mined-out portions of the Genesis Pit;
- Elimination of a pit lake in Genesis Pit as a result of partial backfill of the pit;
- Development and operation of the Bluestar Ridge Pit and construction of an associated haul and access road;
- Installation of up to 35 drains and ten wells to dewater isolated groundwater zones in the Genesis Pit east highwall;
- Vertical expansion of the Section 36 Waste Rock Disposal Facility and construction of an associated haul and access road;
- Vertical expansion of the Section 5 Waste Rock Disposal Facility; and
- Reclamation of areas disturbed by mining activities.
- Continued employment for mining in the Elko area.
- Classification and management of waste rock to prevent Acid Rock Drainage, including an Adaptive Management Plan to provide for supplemental testing and modified classification and management if determined to be necessary as a result of the supplemental testing.

During the review process the following modifications to the proposed Plan of Operations Amendment have been coordinated with NDEP and BLM and adopted by Newmont:

- Waste Rock Management Plan;
- Adaptive Management Plan for Waste Rock (**Appendix A**);
- Modifications to final reclamation contours on waste rock disposal facilities; and
- Haulage of Tertiary Carlin Formation material from the East Lantern Waste Rock Disposal Facility for use as growth media in the Genesis Project area.

Proposed areas of new disturbance within the Genesis-Bluestar Operations Area are listed in **Table 2-2**. Under existing authorizations, the reclaimed use of the Beast, Bluestar, and Genesis pits would remain as open mine pits. Implementation of the Proposed Action would result in backfilling these pits and therefore conversion to waste rock disposal facilities. Subsequent regrading and revegetation of these backfilled pits would change the reclamation to that capable of supporting wildlife habitat and livestock grazing. New disturbance and existing disturbed areas that would be redisturbed are listed in **Table 2-2** and shown on **Figure 2-8**.

For the purposes of this EIS, the new surface disturbance (43 acres) consists of 36 acres of undisturbed ground and 7 acres of exploration roads and drill pads constructed under previous authorization in the proposed Bluestar Ridge Pit area.

Facility	Existing Disturbance/ Permitted Reclamation	New	Change in Existing Disturbance		
			Highwall	Open Pit	
Section 5 WRDF	139/ WRDF				139
Section 36 WRDF	227/WRDF				227
Beast Pit	195/Open Pit	1			196/WRDF
Bluestar Pit	178/Open Pit	8			187/WRDF
Genesis Pit	319/Open Pit		124		195/WRDF
Bluestar Ridge Pit		26		26	0
Bluestar Ridge Haul Road	11	8			19
Section 36 Haul Road	22				22
Total	1135	43	124	26	985

WRDF = Waste Rock Disposal Facility

¹ Within existing Genesis-Bluestar Operations Area

² Change in status of reclamation in existing disturbance.

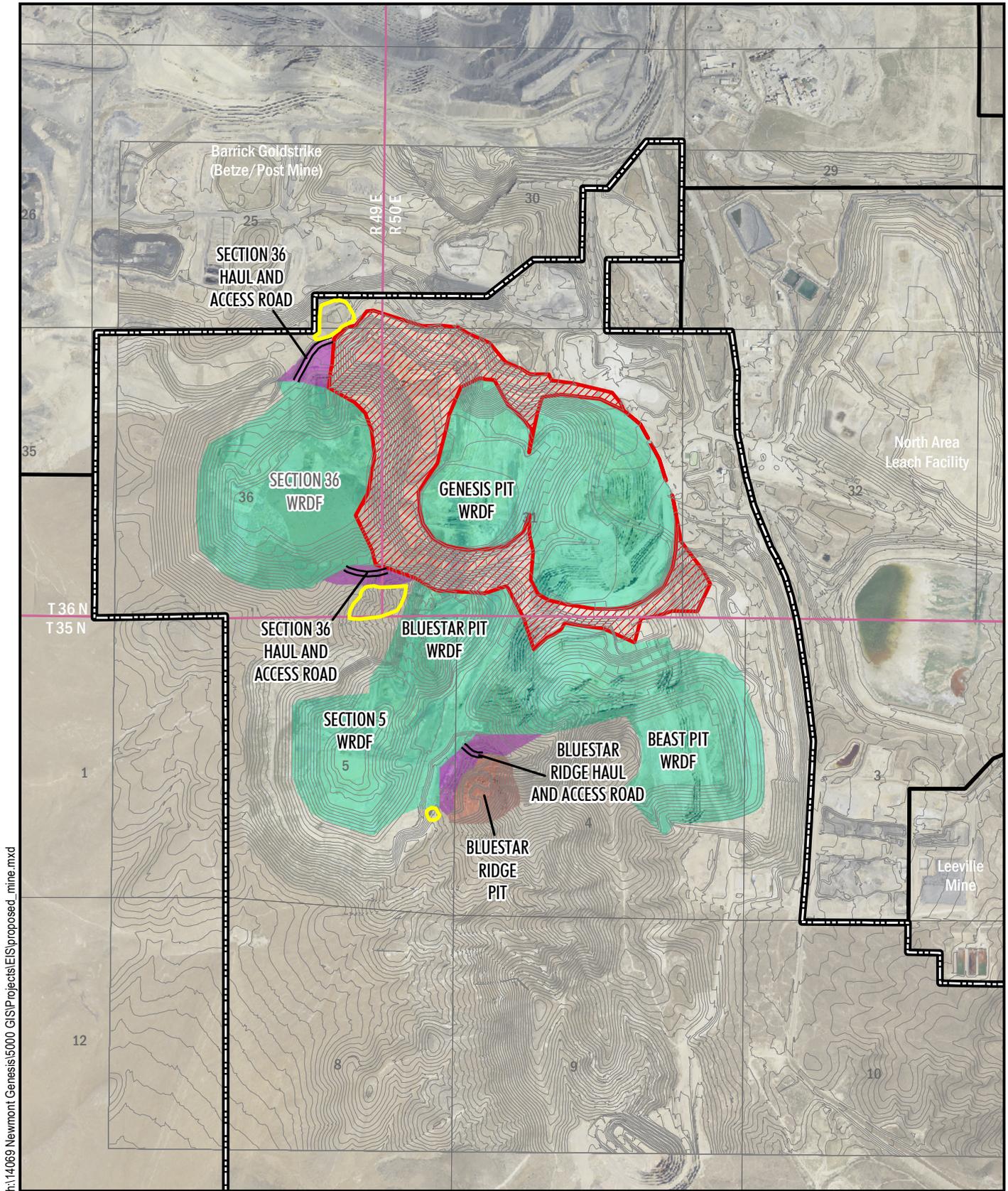
³ Area to be covered with two feet of growth media (Carlin Formation or existing stockpiled material) and seeded.

Source: Newmont 2007a.

The Proposed Action would modify the existing approved reclamation and closure plan resulting in backfill of mined-out pits with waste rock generated from expansion of the Genesis Pit. Waste rock generated during expansion of the Genesis Pit would provide approximately 355Mt of waste rock for use as in-pit backfill to completely fill the previously depleted Bluestar and Beast Mine pits. In-pit backfill would also be used to partially fill mined out portions of the Genesis Pit eliminating formation of a pit lake. Disposal of waste rock in this manner would reduce the amount of land in the Genesis-Bluestar Operations Area that would remain as open pits (from approximately 450 acres to 150 acres) under previously approved permits.

2.3.1 LIFE-OF-MINE SCHEDULE

Under current operating plans and projections, Newmont anticipates the Genesis Project would have an operational mine life of twelve years. Reclamation, closure, and monitoring activities could extend 30 years beyond cessation of active mining. Ore and waste rock production over the life-of-mine operation is shown in **Table 2-3**.



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- Genesis-Bluestar Operations Area
- Township/Range
- Sections

- Genesis Pit Expansion
- Proposed Waste Rock Dump Facilities (WRDF)

Proposed Action

- Proposed Haul and Access Roads
- Proposed Bluestar Ridge Pit
- Growth Media Stockpiles
- Proposed Roads

**Proposed Action
Genesis Project
Eureka County, Nevada
FIGURE 2-8**

TABLE 2-3
Proposed Life-of-Mine Ore and Waste Rock Production (tons)
Genesis Project

Year	Ore			Waste Rock		
	Oxide Leach	Oxide Mill	Refractory Mill	Total	PAG	% PAG of Total
1	300,000	-	-	19,700,000	-	-
2	1,600,000	-	-	38,400,000	200,000	1
3	2,500,000	100,000	100,000	37,300,000	700,000	2
4	4,400,000	600,000	1,300,000	43,700,000	2,900,000	7
5	1,900,000	800,000	1,600,000	12,200,000	2,000,000	16
6	2,600,000	100,000	100,000	46,600,000	1,900,000	4
7	6,400,000	300,000	100,000	53,200,000	4,200,000	8
8	8,900,000	500,000	300,000	50,300,000	5,900,000	12
9	7,700,000	1,300,000	900,000	88,300,000	7,700,000	9
10	7,600,000	1,300,000	2,300,000	50,800,000	2,600,000	5
11	3,000,000	-	-	7,200,000	-	-
12	1,400,000	-	-	1,800,000	-	-
TOTAL	48,300,000	5,000,000	6,700,000	449,500,000	28,100,000	6

PAG = Potentially Acid Generating

Source: Newmont 2007a.

2.3.2 MINING OPERATIONS

Newmont proposes to remove approximately 60Mt of ore and 450Mt of waste rock from phased expansion of the existing Genesis Pit and development of one new pit (Bluestar Ridge). Approximately 48Mt of oxide leach ore would be processed at the existing North Area Leach Facility. Oxide mill ore (5Mt) and refractory ore (6.7Mt) mined from the Genesis Pit would be processed at Newmont's Mill 5/6 facilities, respectively, in the South Operations Area. Ore and waste rock production associated with the Genesis Project is summarized in **Table 2-4**.

Expansion of the Genesis Pit and development of the Bluestar Ridge Pit would occur in the same manner as current mining in the Genesis-Bluestar Operations Area. Ore and waste rock would be drilled and blasted in sequential benches to facilitate loading and hauling. Blasted ore and waste rock would be loaded into end-dump haul trucks using shovels and front-end loaders. Benches would be established at approximately 20-foot vertical intervals with bench widths varying to accommodate safety berms and haul roads. Haul trucks would move within the pits using roads on the surface of benches with ramps extending between two or more benches.

TABLE 2-4 Proposed Ore and Waste Rock Production and Disposition Genesis Project				
Production – Genesis Project				
Mine Pit	Ore (million tons)		Waste Rock (million tons)	
	Oxide Leach	Mill 5/6	PAG	Non-PAG
Genesis Pit	43.9	11.7	28.1	412.4
Bluestar Ridge Pit	4.4	-	-	9.0
Subtotal	48.3	11.7	28.1	421.4
TOTAL	60		449.5	
Waste Rock Disposal – Genesis Project				
Site	PAG (million tons)		Non-PAG (million tons)	
Beast Pit	Cell 1	0.8	91.6	
	Cell 2	3.0		
Bluestar Pit		-	46.5	
Genesis Pit	Cell 1	6.8	194.3	
	Cell 2	11.0		
	Cell 3	0.4		
Section 5 Waste Rock Disposal Facility		3.0	38.7	
Section 36 Waste Rock Disposal Facility		3.1	50.3	
Subtotal		28.1	421.4	
TOTAL			449.5	

PAG = Potentially Acid Generating.
Source: Newmont 2007a.

Drill cuttings would be collected during blast-hole drilling and analyzed to determine gold content and metallurgical and waste rock characteristics. Blasted waste rock material would be separated as PAG or non-PAG and loaded into haul trucks for transportation to a waste rock disposal facility or placed as in-pit backfill in mined-out pits.

2.3.2.1 Genesis Pit

Proposed activity at the Genesis Pit would result in expansion of the current pit to overall dimensions of 6,300 feet in length by 4,400 feet in width (**Figure 2-8**). The depth of the pit would be increased by 360 feet to an elevation of approximately 4620 feet amsl. Development and operation of the Genesis Pit would occur within areas previously disturbed by mining activities, including the Bobcat and Sold pits.

2.3.2.2 Bluestar Ridge Pit

The proposed Bluestar Ridge Pit would be developed on seven acres of private land and 19 acres of public land (**Figure 2-8**). Approximately seven acres within the proposed footprint of the mine pit have been disturbed by exploration activities (roads and drill pads). The Bluestar Ridge Mine is the least economical of all proposed mining activity and would be the last site to be developed. Backfill (or partial backfill) would not be feasible due to the size, geometry, and location of ore in the pit. Most of the lower benches of the Bluestar Ridge Pit are comprised of ore and contain minor amounts of waste rock. Any backfilling of the Bluestar Ridge Pit would require rehandling of waste rock and therefore, would not be economical. Ore and waste rock production associated with the Bluestar Ridge Pit is summarized in **Table 2-4**. All waste rock (approximately 9Mt) generated from the Bluestar Ridge Pit would be placed in the Section 5 Waste Rock Disposal Facility. No PAG waste rock would be generated from this mine pit.

The Bluestar Ridge Pit would extend approximately 1,300 feet in length, 1,400 feet in width, and approximately 600 feet in depth to an elevation of 5340 feet amsl. Elevation of the pit bottom would not intercept baseline groundwater level (5265 feet amsl) precluding formation of a pit lake. Dewatering would not be required for the Bluestar Ridge Pit.

2.3.3 ORE PROCESSING

Oxide leach ore (approximately 48Mt) from the Genesis Pit would continue to be processed at the North Area Leach Facility located approximately one mile east of the Genesis Pit. Low grade oxide leach ore would be hauled to the leach pad as run-of-mine material, while higher grade oxide leach ore may be crushed at the North Area Leach crusher prior to placement on the leach pad. The North Area Leach Facility is located on private land controlled by Newmont. The leach facility covers approximately 507 acres (**Figure 2-8**). NDEP approved Phase VII and VIII expansions of the North Area Leach would provide sufficient capacity (approximately 50Mt) to process ore produced under the Proposed Action.

Approximately 5Mt of oxide mill ore and 6.7Mt of refractory mill ore would be processed at Newmont's Mill 5/6 complex located in the South Operations Area. Oxide and refractory mill ore would be hauled to the South Operations Area via the North/South Haul Road or travel in highway ore trucks along State Route 766 to the South Operations Area gate.

Refractory ore encountered during the Proposed Action may be temporarily stockpiled at the existing Section 3 stockpile area for future processing at Mill 6. This stockpile would be periodically hauled to the South Operations Area for ore processing as the mill feed demands.

Tailings generated from processing 11.7Mt of oxide and refractory ore from the Genesis Project would be placed in the Mill 5/6 Tailings Storage Facility (TSF) located at Newmont's South Operations Area. The Mill 5/6 TSF is permitted under NDEP Water Pollution Control Permit NEV 00950056 to accommodate up to 135Mt of tailings.

2.3.4 MINE PIT DEWATERING

The Gen Fault transects the Genesis Pit from north to south. The portion of the mine pit lying west of the Gen Fault (carbonate rocks) is within the groundwater cone-of-depression (approximately 4175 feet amsl) created from ongoing dewatering activities at Barrick's Betze/Post Mine and Newmont's Leeville Mine and, therefore, would not require additional dewatering (**Figure 2-9**).

Groundwater east of the Gen Fault is in siliceous rocks of the Vinini Formation, which has lower permeability than the carbonate rocks on the west side of the fault. This condition results in a local groundwater system in the siliceous rocks that is not connected hydraulically to the carbonate aquifer. The current groundwater level in siliceous rocks east of the Gen Fault is approximately 5400 feet amsl, compared to 4175 feet amsl in carbonate rocks west of the Gen Fault. Groundwater east of the Gen Fault would require dewatering prior to mining.

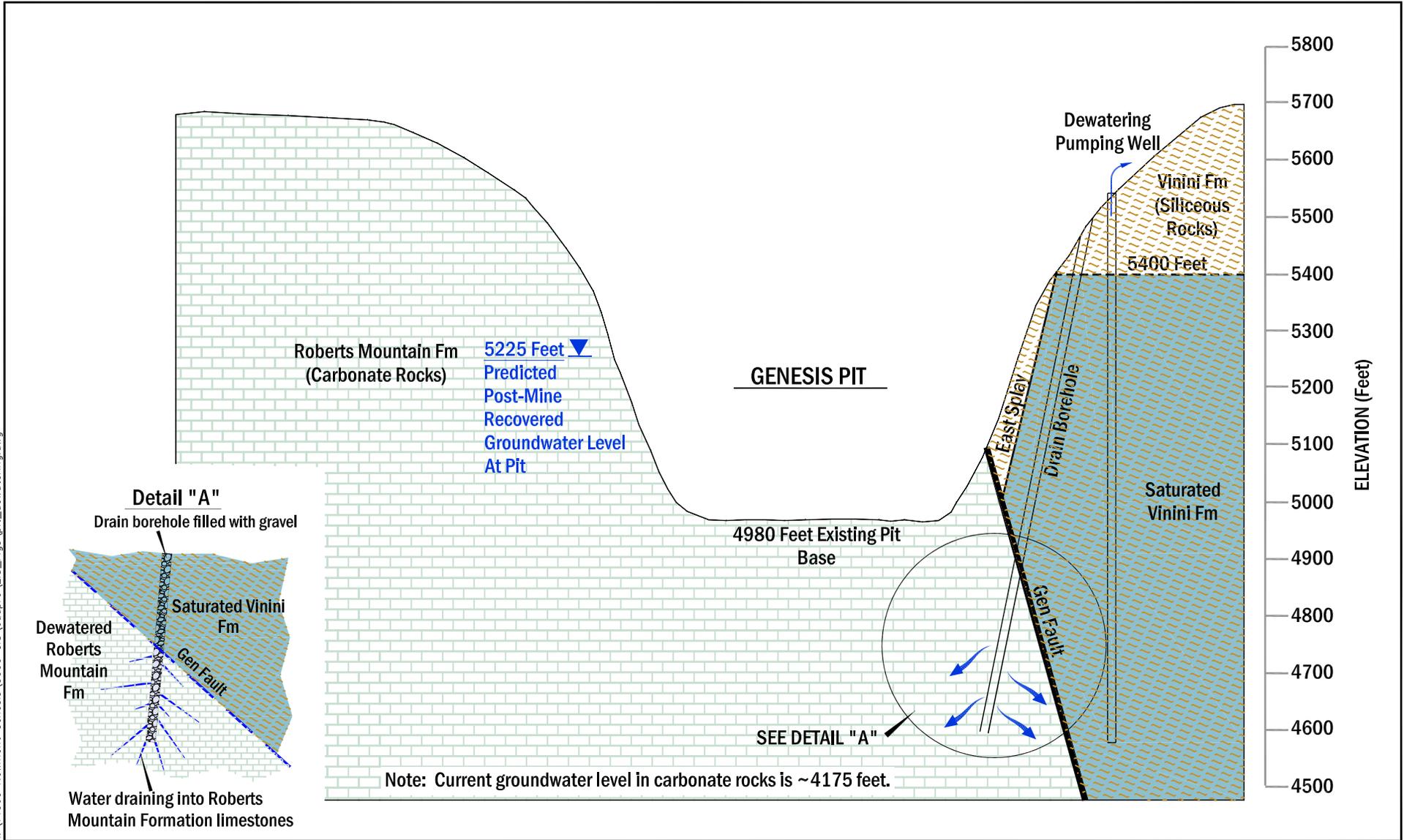
Dewatering groundwater in the siliceous rocks east of the Gen Fault would occur in stages. The first stage would involve construction of six or seven drain boreholes, and several pumping wells. Drain boreholes can be drilled as vertical, angle, and/or horizontally which would allow the isolated groundwater to drain into adjacent carbonate rock previously dewatered (west of Gen Fault). The proposed drains are anticipated to function for several months. Pumping wells would then be installed to remove groundwater remaining in zones not removed via drain boreholes.

Data obtained from the drain boreholes and pumping wells would assist in defining permeability of the rocks. This information would direct the next stage of dewatering, which would likely involve construction of additional drain boreholes and pumping wells. Currently, up to 35 drains and ten wells are planned to dewater the east highwall area. New pumping wells, eight to 14 inches in diameter and ranging from 800 to 1,000 feet in depth, would be constructed east of the mine pit edge. Dewatering wells would combine to pump up to an estimated 250 gpm to allow the expanded Genesis east highwall to be safely constructed. Actual number of wells and drains may be modified as dewatering experience is gained.

Water produced from pumping would be transported via a new surface pipeline to the existing Two Million Gallon Pond located east of the Genesis Pit adjacent to the crusher site (**Figure 2-2**). From there, water would be distributed through existing buried pipelines to Newmont's North Area Leach operations, Barrick's processing facilities, and to the Deep Post/Deep Star underground mining operation. Water produced via drains would infiltrate into permeable, dewatered carbonate rock beneath the Genesis Pit (**Figure 2-9**).

All drain boreholes and wells would be permitted by the Nevada State Engineer. At the end of operational life, the boreholes and wells would be plugged and abandoned in accordance with Nevada regulations, which are intended to ensure that abandoned boreholes and wells do not degrade waters of the State of Nevada.

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Not To Scale

Mine Pit Dewatering Schematic and Cross Section
Genesis Project
Eureka County, Nevada
FIGURE 2-9

2.3.5 WASTE ROCK MANAGEMENT

Phased expansion of the Genesis Pit would require excavation and placement of approximately 450Mt of waste rock. Nearly 80 percent (355Mt) of waste rock generated over the life-of-mine would be used to backfill the Beast, Bluestar, and portions of the Genesis Pit. Approximately 95Mt of waste rock would be used to vertically expand the existing Section 5 (41Mt) and Section 36 (54Mt) Waste Rock Disposal facilities.

About 15,000 samples collected from 3,400 boreholes that described 17,000 lithological points have been evaluated by Newmont to determine the volume and location of PAG material that would be encountered in the proposed Genesis Project. Waste rock with a Net Carbonate Value (NCV) less than zero or paste pH less than 6 is classified as PAG. Conversely, all other rock is classified as non-PAG (Newmont 2007a). Based on these criteria, about six percent of waste rock (28Mt) generated from the Genesis Project would be classified as PAG (carbon sulfur type). This material would be segregated, encapsulated, and monitored in accordance with the Refractory Ore Stockpile and Waste Rock Dump Design, Construction, and Monitoring Plan (Newmont 2003). The remainder of waste rock (non-PAG) would be either oxide carbonate (net neutralizing) or oxide siliceous (inert, slightly basic, or basic).

2.3.5.1 Waste Rock Management Plan

Newmont has submitted a Waste Rock Management Plan for the Genesis Project to NDEP for review as an amendment to its Water Pollution Control Permit for the North Area Leach Facility (WPCP NEV0087065). The amendment includes the use of in-pit backfill as waste rock disposal facilities in the Beast, Bluestar, and Genesis pits. The Waste Rock Management Plan describes the methods, procedures, design, monitoring, and reporting that Newmont would use in managing waste rock associated with proposed mine expansion of the Genesis Project.

The purpose of the Waste Rock Management Plan is to minimize potential for acid drainage through control of the acid generation process. This process occurs when sulfide minerals react with oxygen and water to form sulfuric acid which in turn can liberate trace metals. To characterize the potential to generate acid and/or mobilize metals, numerous static and kinetic tests have been performed on the primary rock types at the Genesis Project. Detailed descriptions of testing performed and results are contained in Geochemical Characterization of the Genesis Project: Proposed Action (Geomega 2008b) on file at the BLM Elko District Office. The Waste Rock Management Plan is summarized and presented in **Appendix A** within the Adapted Management Plan for Waste Rock.

2.3.5.2 Adaptive Management Plan for Waste Rock

Newmont, BLM, and NDEP developed an Adaptive Management Plan (AMP) for Waste Rock to confirm predicted waste rock behavior associated with development of the proposed Genesis Project. The AMP identifies ongoing waste rock characterization work, future waste rock monitoring associated with the Project, and actions that could be employed to manage PAG waste rock should a revised method or increased capacity of the proposed plan be warranted. The AMP is contained in **Appendix A**.

Supplemental rock characterization and confirmation testing associated with the AMP would be completed within the first year of the Genesis Project. Should results of the testing indicate implementation of a revised PAG management method, Newmont would initiate the revised material handling scheme in accordance with the AMP. If supplementary testing indicates there is more than 128 Mt of PAG, the project may be put on hold, if necessary, to prepare adequate engineering designs for the additional PAG material. The AMP provides for management of up to 100Mt of additional PAG material.

After completion of supplemental waste rock testing, waste rock monitoring would revert to the Genesis Project Waste Rock Management Plan, which is a component of Newmont's North Area Leach Operations Water Pollution Control Permit. The Waste Rock Management Plan would be continued throughout the life of the mine once the AMP is completed.

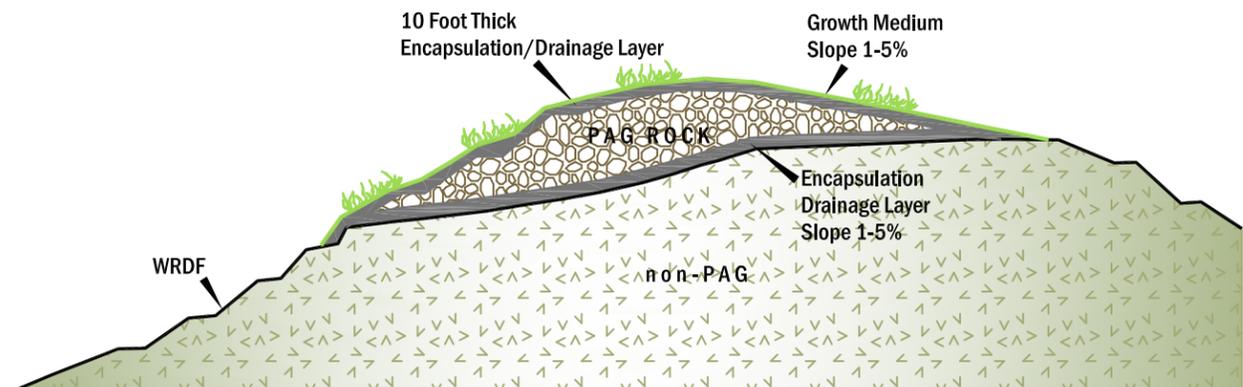
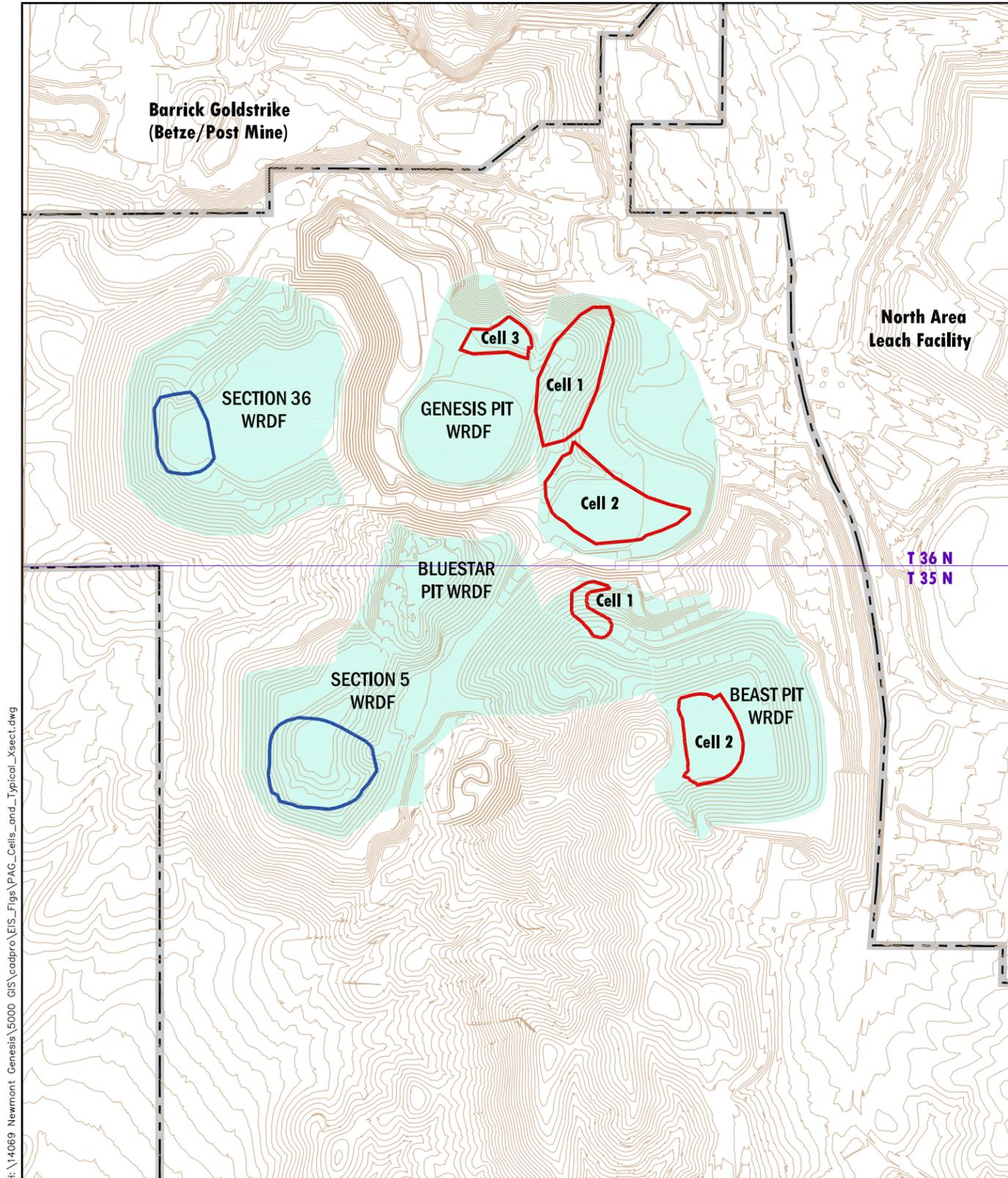
2.3.5.3 PAG Encapsulation Cells

PAG waste rock would be managed by encapsulation in backfilled pits and existing external waste rock disposal facilities. Current design includes construction of seven PAG cells (five cells in backfilled pits and two cells in existing external waste rock disposal facilities). Non-PAG rock would be placed in the bottom portion of each pit to a level above the predicted elevation of the post-mining groundwater level. Groundwater is predicted to rebound to an elevation of 5225 feet amsl in the backfilled portion of the Genesis Pit. This elevation is ten-feet higher than will form under the No Action Alternative due to evaporative loss from the pit lake.

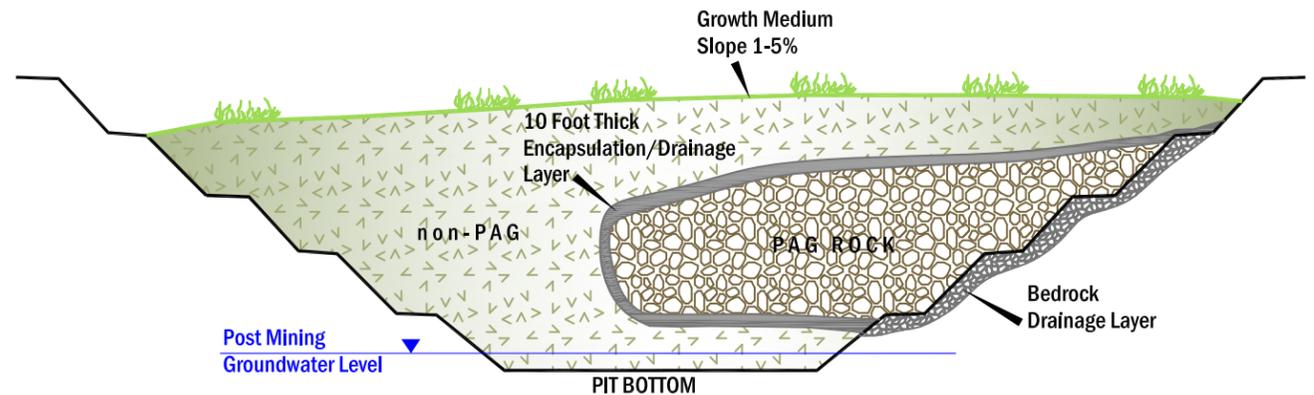
PAG rock would be placed in select locations above the recovered water table elevation and on either limestone benches of the mine pit and/or on non-PAG backfill (**Figure 2-10**). Encapsulation material (rock with an acid neutralizing potential (ANP) to acid-generating potential (AGP) ratio $\geq 3:1$) would be placed above and on the sides of the PAG rock cell to a minimum thickness of ten-feet to complete the encapsulation design. In circumstances where PAG would be placed directly on limestone benches within mined-out pits, Newmont would drill, blast, and dozer rip the surface of the limestone prior to placement of PAG. Placement of Encapsulation material and/or treatment of limestone benches surrounding PAG waste rock in the mined-out pits would promote diversion of meteoric water away from the compacted PAG waste rock. The drainage layer would minimize the amount of meteoric water that contacts PAG waste rock thereby minimizing release of contaminants.

Vertical expansion of the Section 5 and Section 36 Waste Rock Disposal facilities includes construction of PAG cells within non-PAG waste rock. PAG waste rock would be placed on non-PAG rock with a minimum ten-foot thickness of Encapsulation material (ANP:AGP $\geq 3:1$) surrounding the sides, top, and bottom of the cells. Reclamation of the waste rock disposal facilities would include placement of two feet of growth media, grading to eliminate ponding areas, and establishing vegetation to minimize water infiltration.

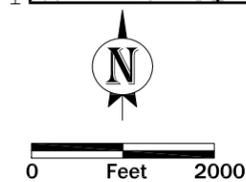
The ratio of non-PAG to PAG waste rock averages 15:1 across all phases of mining at the Genesis Project. Design capacity of encapsulation cells is 31.4Mt of PAG waste rock; 3.3Mt more capacity than the amount of PAG rock projected to be mined. PAG cells would have a maximum of 25 acres of exposed PAG material at any time during the operational life of the Project.



TYPICAL EXTERNAL WRDF PAG CELL CROSS SECTION
Not To Scale



TYPICAL PIT BACKFILL WRDF PAG CELL CROSS SECTION
Not To Scale



- Genesis-Bluestar Operations Area
- Encapsulated PAG Cells
- Proposed Waste Rock Disposal Facilities (WRDF)
- External PAG Cells

2.3.5.4 Waste Rock Disposal Facilities

Newmont proposes to place waste rock excavated during the Genesis Project into the following disposal facilities:

- Beast Pit (includes Sold Pit);
- Bluestar Pit;
- Genesis Pit (includes Bobcat Pit);
- Section 5 Waste Rock Disposal Facility; and
- Section 36 Waste Rock Disposal Facility.

In-Pit Backfill

Backfilling mined-out pits listed above would occur through direct haul of waste rock from active mining operations. In some cases, mine pits would be backfilled to above grade (above current pit rim elevation), and in other cases mine pits would be partially backfilled. Waste rock placed as in-pit backfill would be confined by pit walls buttressing edges of waste rock backfill. Only non-PAG waste rock would be placed below the predicted post-mining groundwater elevation (5225 feet amsl).

PAG cells located below grade within mine pits would be constructed as described in Section 2.3.5.3 – PAG Encapsulation Cells. Individual mine pit backfill descriptions follow.

Beast Pit

Use of the mined-out Beast Pit as a waste rock disposal facility would require one acre of new surface disturbance on public land administered by BLM. The Beast Pit has capacity to store approximately 95Mt of waste rock that would be produced during expansion of the Genesis Pit. Waste rock would completely fill the pit to a maximum elevation (6260 feet amsl) approximately 340 feet above the existing pit crest (5920 feet amsl). Total fill would be approximately 720 feet thick at the deepest point.

Two PAG encapsulation cells would be constructed in the Beast Pit to accommodate a total of up to 3.8Mt of PAG rock (**Figure 2-10**). Groundwater elevation in the area prior to dewatering activities was 5265 feet amsl. Non-PAG waste rock would be used to backfill the Beast Pit to an elevation of 5730 feet amsl (approximately 500 feet above the original water table elevation) where construction of PAG Cell I would begin. PAG Cell I would be constructed on limestone host rock benches to an overall thickness of about 100 feet by 700 feet in length and 400 feet in width. Cell I would have capacity of 0.8Mt for PAG material.

PAG Cell 2 in the Beast Pit would be constructed at an elevation of approximately 6030 feet amsl, which is 765 feet above the original groundwater table (5265 amsl). PAG Cell 2 would be approximately 1,300 feet in length, 900 feet in width, and an average thickness of 120 feet, with a capacity to store 3Mt of PAG waste rock. This PAG cell would be constructed over non-PAG waste rock, as well as mine pit benches constructed in limestone.

Bluestar Pit

Development of the Bluestar Pit for waste rock disposal would require disturbance of four acres of private land and four acres of public land administered by BLM. A total of 46.5Mt of non-PAG waste rock from expansion of the Genesis Pit would be placed as backfill in the Bluestar Pit. The bottom of the Bluestar Pit would be 360 feet below ground surface at 5320 feet amsl. The proposed in-pit backfill would completely fill the pit and extend an additional 440 feet above ground level to an approximate height of 6120 feet amsl.

Genesis Pit

Waste rock disposal in the Genesis Pit would not require any new surface disturbance. Approximately 212Mt of waste rock generated during later phases of pit expansion would be placed in mined-out portions of the Genesis Pit. Waste rock placed as backfill would slope from elevation 5370 feet amsl on the west side of the pit up to about 5650 feet amsl at the east edge of the pit (**Figure 2-11**). Three PAG cells would be developed during construction of the disposal facility (**Figure 2-10**).

Non-PAG waste rock would be placed in the pit up to an elevation of 5280 feet amsl. Construction of Genesis PAG Cell 1 would begin west of the Gen Fault at a bottom elevation of 5280 feet amsl, approximately 55 feet above the predicted post-mining groundwater (recovered) water elevation of 5225 feet amsl. The cell would be approximately 2,000 feet long, 800 feet wide, and 100 feet thick, with a design capacity of approximately 7Mt. Cell 1 would be constructed over carbonate-rich waste rock and limestone host rock.

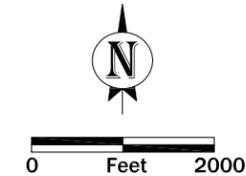
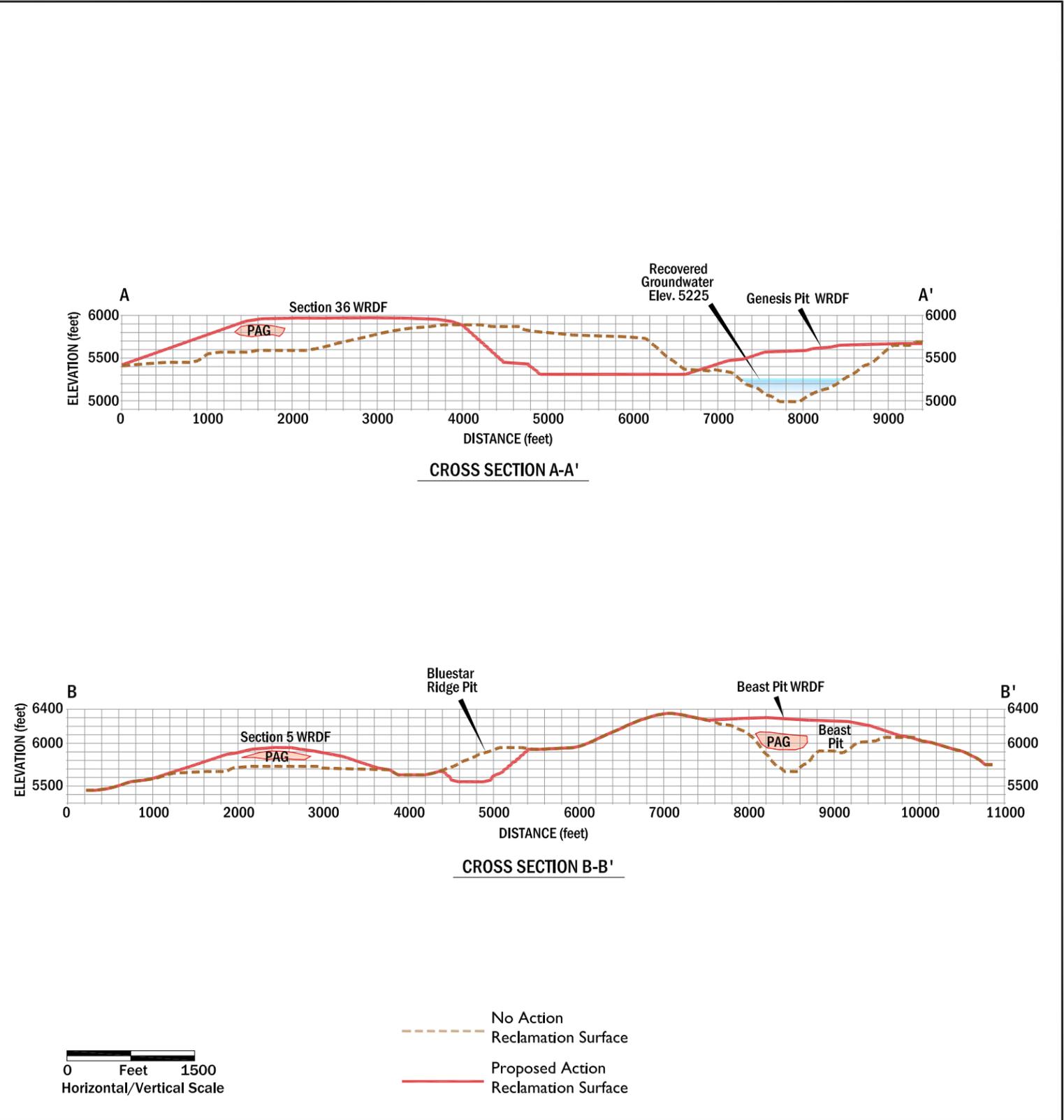
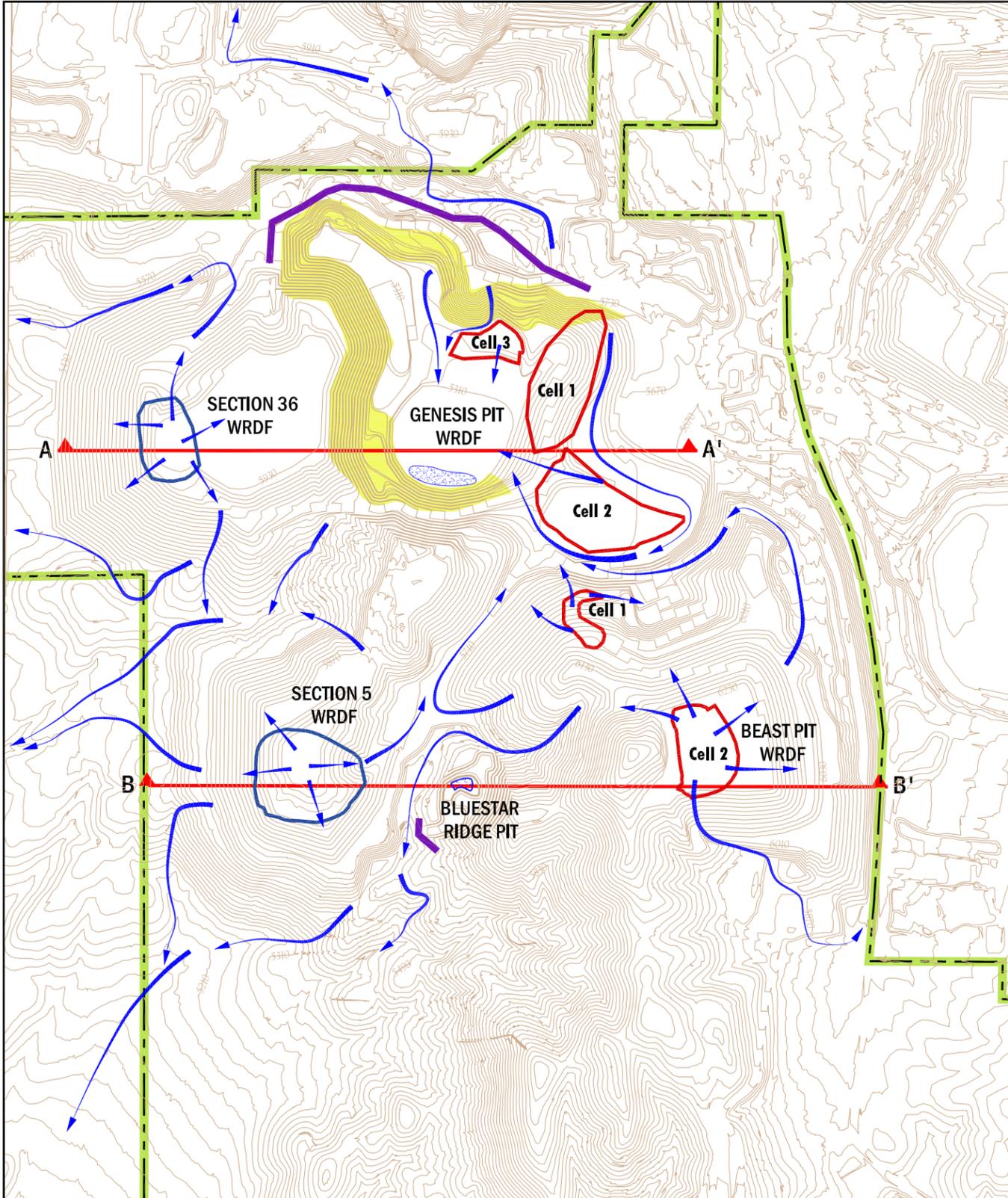
Construction of Genesis PAG Cell 2 would begin at an elevation of 5420 feet amsl (approximately 155 feet above the original water table elevation) and extend 1,100 feet in length, 2,000 feet in width, with an average thickness of 140 feet. Design capacity of Cell 2 is 13Mt. Approximately 11Mt of PAG waste rock from expansion of the Genesis Pit would be placed in this encapsulation cell. The additional design capacity provides a contingency for unforeseen conditions that may arise during the Project. Cell 2 would be constructed over carbonate-rich waste rock and limestone host rock.

Genesis PAG Cell 3 would be constructed to accommodate approximately 0.4Mt of PAG waste rock generated during late phases of mine pit expansion. Construction of the PAG cell would begin at an elevation of 5280 feet amsl, 55 feet above the predicted recovered water elevation of 5225 feet amsl. PAG Cell 3 would be approximately 500 feet long, 900 feet wide, with an overall thickness of 80 feet. This cell would be placed against limestone rock in the northernmost portion of waste rock fill material.

External Waste Rock Disposal Facilities

Two existing external waste rock disposal facilities (Section 5 and Section 36) would be used for disposal of waste rock associated with the Genesis Project. Waste rock would be placed by end-dumping from haul trucks in lifts that facilitate reclaiming the surface to an overall 3.0H:1.0V slope to blend with surrounding topography. Design of the disposal facilities was developed using a 1.8 static factor of safety and a 1.2 pseudo-static factor of safety. Waste rock disposal facilities would be engineered for stability and designed, where practicable, with boundaries to blend with surrounding

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- Genesis-Bluestar Operations Area
- Remaining Highwall Area
- Safety Berms
- Backfill PAG Cells
- External PAG Cells
- Flow Direction of Surface Runoff
- Seasonal Ponded Areas



- No Action Reclamation Surface
- Proposed Action Reclamation Surface

Post Closure Contours - Proposed Action
Genesis Project
Eureka County, Nevada
FIGURE 2-11

topography. Existing surface water and sediment control structures around the base, sides, and upslope positions would be used to divert surface water run-off away from these facilities. Newmont has also proposed rounding the tops of backfill areas and waste rock disposal facilities to reduce visual effects and provide undulations and topographic relief to blend with surrounding undisturbed areas. Angular features, including tops and edges would be rounded.

Section 5 Waste Rock Disposal Facility

Expansion of the Section 5 Waste Rock Disposal Facility would not require any additional surface disturbance. Proposed vertical expansion of the facility would begin at an elevation of 5800 feet amsl and extend 160 feet to an elevation of 5960 feet amsl. The addition of 160 feet of waste rock to the existing facility would result in a total maximum height of 380 feet and average height of 220 feet above ground surface. The extension would increase the capacity of the existing facility by approximately 41Mt.

The Section 5 Waste Rock Disposal Facility would contain one PAG cell with a design capacity of 4.5Mt. Approximately 3Mt of PAG waste rock from expansion of the Genesis Pit would be placed in this encapsulation cell. A ten-foot thick rind of carbonate-rich waste rock would be placed around the PAG cell for its final configuration.

Section 36 Waste Rock Disposal Facility

Vertical expansion of this facility would increase capacity by 54Mt to a total of 157Mt. Toe elevation of the waste rock disposal facility is approximately 5460 feet amsl. The proposed crest elevation would be approximately 5940 feet amsl for a total maximum height of approximately 480 feet, and an average height of 320 feet above ground surface. Placement of waste rock would be preceded by relocation of existing growth media stockpiles (GM-1 and GM-2) (**Figure 2-2**). These stockpiles would be placed at a location that would not be disturbed by the proposed expansion.

Expansion of the Section 36 Waste Rock Disposal Facility would include construction of a PAG cell approximately 1,200 feet long, 1,100 feet wide, and 100 feet thick designed to accommodate placement of 3.1Mt of PAG waste rock. Approximately 2.2Mt of PAG waste rock from the Genesis Pit would be placed in the Section 36 PAG cell. The PAG cell would be placed above carbonate-rich waste rock, and would be completely encased with a ten-foot thick layer of non-PAG material. Floor elevation of the PAG cell would be approximately 5630 feet amsl, which is 405 feet above the predicted post-mining groundwater elevation of 5225 feet amsl.

Inspection of waste rock disposal facilities would be performed quarterly and following heavy precipitation events to detect abnormal conditions, anticipate remedial actions, and ensure integrity of ditches, berms, and collection ponds. Run-off from waste rock disposal facilities would be controlled (see Section 2.3.6 - Surface Water Controls).

2.3.5.5 Waste Rock Disposal Facility Design

Based on regional seismicity, a magnitude 7.0 earthquake was used for design of waste rock disposal facilities. Since epicenters are not closely associated with identified faults in this region, the epicenter of a maximum credible earthquake could occur anywhere within the area (Ryall 1977). Consistent with

standard and accepted design practices, the value of 0.13 gravity (g) is taken as two-thirds of the maximum horizontal ground acceleration of 0.2g expected to occur as a result of the design seismic event of 7.0 on the Richter scale. Newmont has designed the waste rock disposal facilities with a horizontal coefficient of acceleration of 0.13g used to simulate earthquake loading for a pseudostatic case (Newmont 2007a).

2.3.6 SURFACE WATER CONTROLS

No new surface water control structures would be required under the Proposed Action. Surface water run-off would be controlled within the Project area using existing diversion channels, berms, and water/sediment retention facilities as described in Section 2.2.1.4 – Surface Water Control Structures and shown on **Figure 2-3**. Sediment collection ponds and ditches would be periodically cleaned to ensure adequate capacity is maintained. Sediment would be returned to soil stockpile areas or placed on reclaimed areas within the mine area. Sediment control structures would remain active during the post-closure period until such time as reclamation has stabilized and their use is no longer required. Reclaimed areas would be routinely inspected to assess vegetation establishment and the effectiveness of erosion control. Where warranted, maintenance would be employed to promote vegetation reestablishment and repair erosional features.

2.3.7 GROWTH MEDIA SALVAGE

Prior to any new surface disturbance, growth media would be salvaged and placed in existing stockpiles for future use in reclaiming disturbed areas. Growth media would be salvaged from proposed areas of new disturbance (Bluestar Ridge Mine, in-pit backfill areas, and haul roads) and transported to stockpiles using scrapers, wheel dozers, track dozers, haul trucks, and loaders. Newmont would salvage all growth media available from the proposed disturbance areas. Salvageable soil in the Bluestar Ridge Mine, in-pit backfill areas, and haul roads range from three to six inches in depth and would yield approximately 39,000cy of growth media. Growth media stockpiles are shown on **Figure 2-2**.

Newmont would implement BMPs to reduce soil loss from stockpiles by constructing run-off control berms, mulching, adding organic matter, interim seeding, or leaving slopes in roughened condition. Soil suitability of growth media is summarized in Section 3.4.4 - Soil Resources.

Newmont estimates that approximately 100,000cy of Carlin Formation would be encountered during development of the Genesis Project. Any Carlin Formation material encountered would be evaluated for reclamation purposes and, if suitable, direct hauled to regraded areas or stockpiled for future use in reclamation.

Under the Proposed Action, expansion of the Section 36 Waste Rock Disposal Facility requires that existing growth media stockpiles (approximately 622,000cy) be relocated. Existing growth media stockpiles located on the Section 36 Waste Rock Disposal Facility would be relocated to sites identified on **Figure 2-8**.

2.3.8 HAUL AND ACCESS ROADS

Development and operation of the Genesis Project would require approximately 6,150 feet (eight acres) of new roads on private land for construction of haul roads, access roads, and service roads. Proposed haul roads would be 100- to 120-foot wide (running width) to safely accommodate haul truck traffic with a maximum gradient of ten percent. Haul and access roads associated with the Proposed Action would be internal to pit expansion and access to backfill selected pits. Haul roads would be constructed using non-PAG waste rock or in-place materials. Berms (approximately five to six feet in height) would be constructed along each side of haul roads. No change in haulage routes external to the Genesis-Bluestar Operations Area would result from the Proposed Action.

Haul roads would be maintained on a continuous basis to ensure safe, efficient haulage operations and to minimize fugitive dust emissions in accordance with the NDEP Bureau of Air Pollution Control Class II Air Quality Operating Permit No. 1041-0402.02. Access roads and service roads would be constructed to an average width of 35 feet using in-place materials and non-PAG waste rock similar to haul roads.

2.3.9 ANCILLARY FACILITIES

Existing ancillary facilities in the North Operations Area complex (e.g., a truck shop, office building, light vehicle shop, and a fuel island) would be used to support mining activities at the Genesis Project. No new ancillary facilities would be needed to support the Proposed Action.

2.3.10 ENERGY USE

Estimated diesel fuel consumption for the Genesis Project would be approximately 6 million gallons annually and about 70.4 million gallons over the twelve-year life of the Project. Electrical power consumption associated with processing oxide leach ore at the North Area Leach Facility is estimated to be 13,200 MWh annually and 158,400 MWh over the life-of-mine. Processing refractory ore from the Genesis Project at Mill 5/6 is estimated to require about 420,500 MWh annually (5.04 gigawatt hours over twelve-year life-of-Project) (Newmont 2009a).

2.3.11 HAZARDOUS MATERIALS/SOLID AND HAZARDOUS WASTE

2.3.11.1 Hazardous Materials

Quantities Greater Than Reportable Quantities

The term “hazardous materials” is defined in 49 CFR 172.101. Hazardous substances are defined in 40 CFR 302.4 and the Superfund Amendments and Reauthorization Act Title III. Hazardous materials and hazardous substances that would be transported, stored, or used in quantities greater than the Threshold Planning Quantity designated by Title III for emergency planning at Newmont’s Carlin Trend operations are summarized in **Table 2-5**.

Hazardous materials are transported to the South Operations Areas via State Highway 766 north of Carlin. U.S. Department of Transportation regulated transporters would be used for shipment. U.S. Department of Transportation approved containers would be used for on-site storage (Newmont

2007a), and spill containment structures would be provided. Hazardous materials would be stored in designated areas on private and public land.

Substance	Area Used/Stored	Rate of Use (per year)	Quantity Stored On-site	Storage Method	Waste Management
Diesel Fuel	Mine/truck shop	45 Mgals	1.3 Mgals	Bulk tank	No waste
Hydraulic Fluid	Mine/truck shop	80,000 gal.s	12,000 gals	Bulk tank totes, drums	Recycled
Motor Oil	Mine/truck shop	50,000 gals	10,000 gals	Bulk tank totes, drums	Recycled
Antifreeze	Mine/truck shop	40,000 gals	8,000 gals	Bulk tank totes, drums	Recycled
Explosives	Explosive (powder) magazine	1.3 Mlbs	25,000 lbs	Magazine	No waste
Gasoline	Mine/truck shop	730,000 gals	30,000 gals	Bulk tank	No waste
Propane	Mine/surface	1.8 Mgals	350,000 gals	Bulk tank	No waste
Grease	Mine/truck shop	80,000 lbs	50,000 lbs	Totes, drums	Recycled
Cyanide	Leach Pad	4.8 Mlbs	400,000 lbs	Bulk tank	Recycled
Lime	Heap Leach Facility/Lime silo		837 tons	Silo	No waste

Mgals = million gallons ; gals = gallons; Mlbs = million pounds ; lbs. = pounds

Source: Newmont 2010.

Quantities Less Than Reportable Quantities

Small quantities of hazardous materials less than the Threshold Planning Quantity not included in **Table 2-5** would also be managed by Newmont at the respective operations areas. These include vehicle and equipment maintenance products, office products, paint, and batteries.

2.3.11.2 Solid W aste

All non-hazardous solid waste generated at the Genesis Project would be disposed in an existing NDEP approved Class III waived landfill located within the Genesis-Bluestar Operations Area (**Figure 2-2**). Typical solid waste generated at the Project would include tires, paper and plastic packaging, and household type refuse.

2.3.11.3 Hazardous W aste

Hazardous wastes would not be generated at the proposed Genesis Project. Wastes associated with ore processing would be covered under either the North Operations Area, a Conditional Exempt Small Quantity Generator of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) (40 CFR Part 260-270), or the South Operations Area which is a Large Quantity Generator of hazardous waste as defined by RCRA.

2.3.12 EMPLOYMENT

Under the Proposed Action, Newmont would task about 687 workers from its existing Carlin Trend work force to the Genesis Project on an average annual basis. The Genesis Project would be operated on 24-hours per day, seven days per week basis providing stable employment over the twelve-year mine life. The proposed Genesis Project would not result in hiring new employees, but would extend the mine-life and therefore employment of Newmont's Carlin Trend work force.

2.3.13 RECLAMATION

Reclamation activities for the Genesis Project are designed to meet State of Nevada requirements (Nevada Revised Statutes [NRS] 519A.010-519A.290 and NAC 519A.010 – 519A.415) and achieve post-mining land uses consistent with the Elko Resource Area Resource Management Plan (BLM 1987). Reclamation is designed to return disturbed land to a level of productivity comparable to pre-mining levels associated with adjacent land. Post-mining land uses include wildlife habitat, livestock grazing, dispersed recreation, mineral exploration and development. Certain mine components (e.g., open mine pit) may have restrictive post-mine land uses.

Short-term reclamation goals would be to stabilize disturbed areas and protect adjacent undisturbed areas from unnecessary or undue degradation. Long-term reclamation goals include public safety, stabilization of the site, and establishment of a productive vegetative community consistent with post-mining land uses.

2.3.13.1 Redistribution of Growth Media

During initial mine development on private property in the Genesis-Bluestar Operations Area, salvage of growth media may not have been sufficient to reclaim current levels of disturbance as the mining occurred before the State of Nevada instituted reclamation requirements for private land. In recognition of this deficiency, Newmont has proposed to haul approximately 3.0 million cubic yards (Mcy) of Tertiary Carlin Formation material from the East Lantern Waste Rock Disposal Facility for use as growth media in reclamation of all disturbed and redisturbed areas associated with the proposed Genesis Project (985 acres). This material would provide two feet of growth media for placement over in-pit (Beast, Bluestar, and Genesis) and external (Sections 5 and 36) waste rock disposal facilities and access and haul roads. Approximately 622,000cy of growth media from existing stockpiles and approximately 39,000cy that would be salvaged from the Bluestar Ridge Pit also would be used for reclamation. There may be as much as 100,000cy of Carlin Formation material produced during expansion of the Genesis Pit that may be suitable for use in reclamation. Haulage of 3.0Mcy of Carlin Formation growth media from the East Lantern Waste Rock Disposal Facility would require about 9,500 trips using Cat 793 haul trucks with a 260-ton capacity.

Prior to replacing growth media, disturbed areas would be regraded to create a stable post-mining configuration, establish effective drainage to minimize erosion, and protect surface water resources. To the extent practicable, grading would blend disturbed areas with the surrounding terrain.

Mine Pits

The previously mined Beast and Bluestar pits would be used as in-pit waste rock disposal facilities and backfilled to elevations above existing pit rims by 340 and 440 feet, respectively. Slopes resulting from backfill of these pits would be regraded to an overall average of 3.0H:1.0V. Grading would be done to minimize erosion, facilitate reclamation activities, (seeding, mulching), and provide a surface that would support vegetation. The top of the waste rock disposal facilities would be ripped and graded to an overall two percent slope to promote runoff and eliminate ponding of precipitation and snowmelt.

Following grading, two feet of growth media would be placed on disturbed areas and revegetated with the approved seed mix. Final reclaimed contours are shown on **Figure 2-11**. A computer generated graphic depicting final topographic relief at completion of the Project is shown on **Figure 2-12**.

Under the Proposed Action, the Beast and Bluestar pits would be backfilled. The Bluestar Ridge Pit would not be backfilled and would remain as an open pit following cessation of mining operations. The Genesis Pit would be partially backfilled to eliminate formation of a pit lake. Waste rock placed as backfill would slope from elevation 5370 feet amsl in the west side of the pit up to about 5650 feet amsl at the east side of the pit.

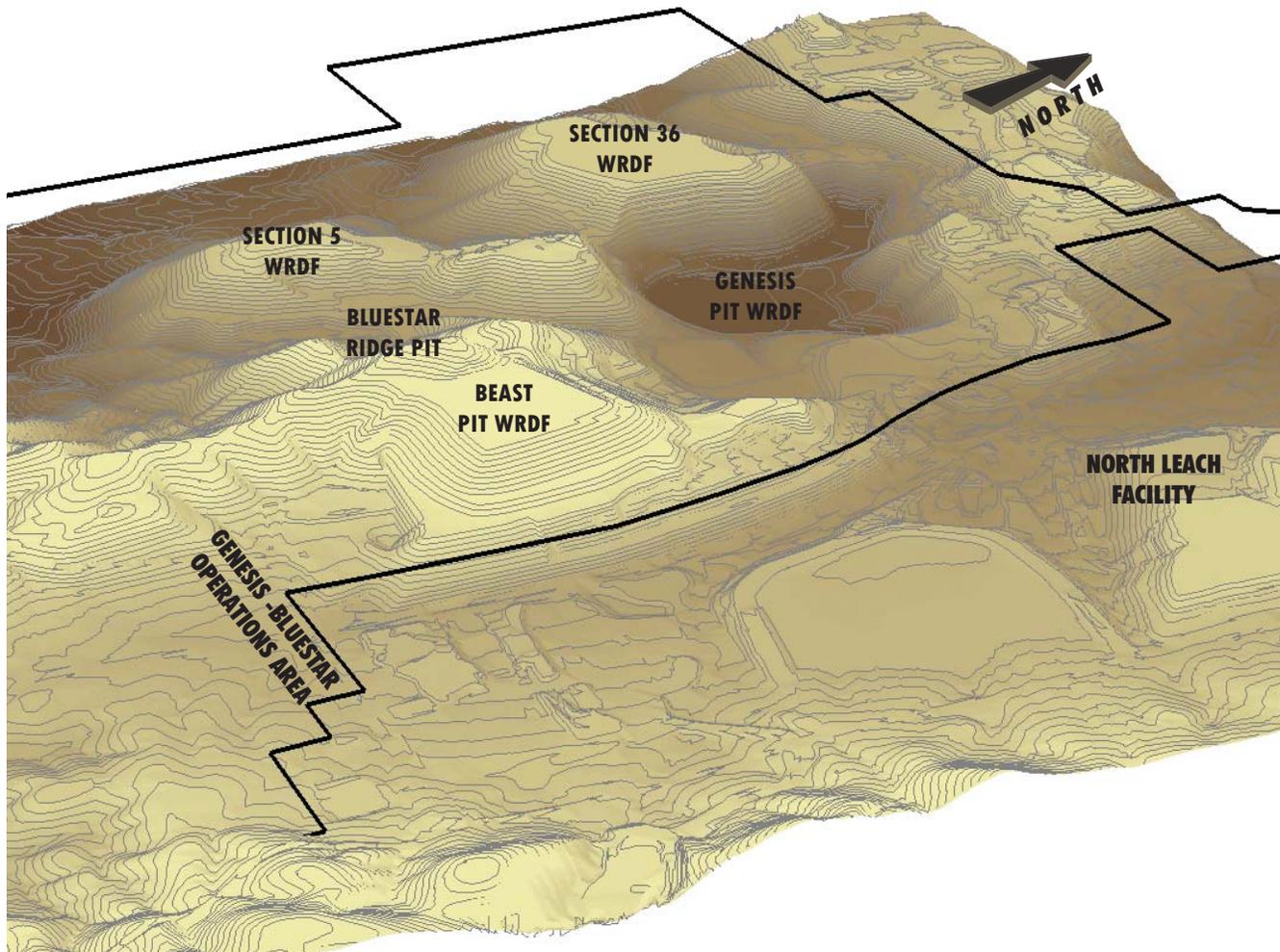
The sloped, backfilled portion of the pit would be covered with two feet of growth media and revegetated. Some ponding of precipitation and storm water runoff could be expected in the lowest portions of backfilled material near the base of the west highwall, which would likely rapidly evaporate or infiltrate into carbonate rock of the Roberts Mountain Formation.

A highwall (approximately 25,000 linear feet) would remain around the west and north portions of the Genesis-Bluestar Pit. The highwall at the west end of the pit would range in elevation from 5370 feet amsl to 5850 feet amsl.

Growth media salvaged during development of the Bluestar Ridge Pit would be used during reclamation of associated haul roads, in-pit backfill of the Beast Pit, and the Section 36 Waste Rock Disposal Facility. Some ponding of water could be expected in the bottom of the pit in response to rain events or snowmelt run-off but would likely rapidly evaporate or infiltrate into carbonate rock, which would form the bottom of the completed pit.

Approximately 10,000 linear feet of safety berms would be constructed around the open pits and warning signs posted to identify potential hazards associated with open-pit highwalls or open excavations (see Section 2.2.1.5 – Reclamation). Berms would be revegetated with the approved seed mixture. Newmont would maintain the berms and signs, until reclamation monitoring is complete. Proposed location of berms around the Bluestar Ridge and Genesis pits are shown on **Figure 2-11**.

Newmont will remove the signs from public land upon release of reclamation liability.



Not To Scale

Conceptual Topographic Relief
Final Reclamation
Genesis Project
Eureka County, Nevada
FIGURE 2-12

2.3.13.2 External Waste Rock Disposal Facilities

Reclamation of waste rock placed in the Section 5 and Section 36 Waste Rock Disposal facilities under the Proposed Action would be regraded to an overall average slope of 3.0H:1.0V. Grading would be done to minimize erosion, facilitate reclamation activities, (seeding, mulching), and provide a surface that would support vegetation. The top of the waste rock disposal facilities would be ripped to relieve compaction from mining equipment and graded to an overall two percent slope to promote runoff and eliminate ponding of precipitation and snowmelt. Tops of waste rock disposal facilities would be regraded to provide undulations and topographic relief to blend with surrounding undisturbed areas. Angular features, including tops and edges would be rounded. Following final grading, two feet of growth media would be placed on the disposal facilities and revegetated with the approved seed mix. Final reclaimed contours are shown on **Figure 2-11**.

PAG cells located within these disposal facilities would be encapsulated with a minimum ten-foot thick layer of non-PAG acid-neutralizing waste rock. The surface of the PAG cell and overlying surface material (waste rock) would be sloped to eliminate ponding and minimize infiltration of meteoric water (see Section 2.3.5.3 - PAG Encapsulation Cells).

2.3.13.3 Haul Roads and Ancillary Facilities

Roads associated with the Genesis Project would be reclaimed concurrently with cessation of operations in individual areas. Roads remaining at the end of mining operations would be reclaimed when no longer needed for reclamation and access.

Haul roads associated with waste rock disposal areas would be reclaimed concurrently with closure of the respective disposal area. Haul roads not located on the waste rock disposal site would be reclaimed by regrading to provide proper drainage and ripped to reduce compaction. Two feet of growth media would be placed on haul and access roads associated with the Proposed Action and seeded. Reclaimed roads would be regraded, to the extent practical, to reestablish original topography and drainage of the site and to control erosion. Culverts would be removed and natural drainage reestablished.

No new ancillary facilities are needed or would be constructed under the Proposed Action. Ancillary facilities that would be used to support the Genesis Project are located in the North Operations Area about one mile east of the Project. These facilities include a truck shop, office building, light vehicle shop, and a fuel island. Reclamation of these existing facilities would be in accordance with NDEP permit #0176 and NDEP permit #0056 for Mill 5/6 at Newmont's South Operations Area. The Proposed Action may result in an extended life of these facilities.

2.3.13.4 Revegetation

The goal of Newmont's revegetation program is to stabilize reclaimed areas, ensure public safety, and establish a productive vegetative community in accordance with the Elko Resource Area Resource Management Plan (BLM 1987) and designated post-mining land uses (Newmont 2007b). Plants proposed for use on backfilled mine pits, waste rock disposal facilities, and haul roads are shown in **Table 2-6**. Modifications to the seed list, application rates, cultivation methods, and techniques may change based on success of concurrent reclamation. Site-specific seed mixtures and application rates would be

developed through consultation with and approval by BLM, NDEP, and NDOW. Seedlings may be substituted for seeds. The seed mix selected would represent a Reclaimed Desired Plant Community and the mix would be appropriate for each ecological site in the Project area. A perimeter fence along the permit boundary would remain in place until vegetation is established on reclaimed areas.

Species		Pounds Pure Live Seed per Acre
Common Name	Scientific Name	
Bluebunch wheatgrass	<i>Agropyron spicatum</i>	2
Western wheatgrass	<i>Agropyron smithii</i>	2
Great Basin wildrye	<i>Elymus cinerus</i>	2
Small burnet	<i>Sanguisorba minor</i>	2
Fourwing saltbush	<i>Atriplex canescens</i>	3
Prostrate summer cypress	<i>Kochia prostrata</i>	1.5
Cicer milkvetch	<i>Astragalus cicer</i>	1.5
Sandberg bluegrass	<i>Poa sandbergii</i>	1
Wyoming Big Sagebrush	<i>Artemisia tridentata wyo.</i>	0.1
TOTAL		15.1

Source: Newmont 2007b.

Vegetation on reclaimed areas likely would be dominated by grasses with low densities of native forbs and shrubs. Typically, communities of big sagebrush, the most extensive pre-mining plant community, have proven difficult to re-establish on reclaimed land (Schuman and Booth 1998; Vicklund *et al.* 2004). Establishment of big sagebrush on reclaimed land has been shown to benefit from application of mulch, inoculation with *arbuscular mycorrhizae*, reduced competition with herbaceous species (lower seeding rate of grasses and forbs), and direct-placed topsoil (Schuman and Booth 1998). *Arbuscular mycorrhizae* are soil fungi that form a symbiotic relationship with roots of sagebrush and other plants, which improves drought tolerance. *Arbuscular mycorrhizae* are lost when topsoil and other growth media are stockpiled. Newmont would provide inoculation with *arbuscular mycorrhizae* during the revegetation phase of reclamation.

Criteria for bond release of revegetated areas would be in accordance with the final version of the Revised Guidelines for Successful Mining and Exploration Revegetation (BLM NV IM 99-013), NRS 519A, and 43 CFR 3809.420, which requires, in part, "...establishment of a stable and long-lasting vegetative cover that is self-sustaining and, considering successional stages, will result in cover that is:

- Comparable in both diversity and density to pre-existing natural vegetation of the surrounding area; or
- Compatible with the approved BLM land use plan or activity."

Newmont would continue annual weed surveys to direct weed control efforts as described in Section 2.2.1.6 - Invasive, Non-native Species.

2.3.13.5 Reclamation Schedule

As various facilities reach the end of their period of use, Newmont would initiate reclamation activities concurrent with ongoing mining operations. As mining operations progress, backfilled portions of mined-out pits would be concurrently regraded, topsoiled, and seeded. In some areas, growth media would be temporarily stockpiled to allow adequate backfilling and regrading of mined-out portions of the pit prior to placement of growth media. The reclamation schedule would encompass the period between cessation of mining through post-reclamation monitoring as shown in **Table 2-7**.

Reclamation would take place concurrent with operations where possible. The proposed post-reclamation topography for the Genesis Project is shown on **Figure 2-11**. A Final Permanent Closure Plan meeting State of Nevada requirements (NAC 445A.447) would be filed with NDEP two years prior to closure of the mine.

2.3.13.6 Monitoring/Evaluation of Reclamation

Newmont, in cooperation with BLM and NDEP, would evaluate the status of vegetative growth during three full growing seasons following completion of planting. Final bond release may be considered at that time. Interim progress of reclamation at the Genesis Project area would be monitored as requested by the agencies. Water monitoring, as described in the Resource Monitoring section of this chapter, would also be used in evaluating reclamation success.

2.3.14 RESOURCE MONITORING AND OPERATOR COMMITMENTS

2.3.14.1 Air Quality

Emissions would be monitored in accordance with requirements imposed by an existing NDEP Air Quality Operating Permit issued for Newmont's North Area Operations (AP 1041-0402.02). Newmont would control fugitive dust emissions in accordance with NRS 445B.230.6 and its Fugitive Dust Control Plan approved by NDEP-Bureau of Air Pollution Control. The Plan outlines the use of water and/or other surface treatments such as chemical binders (mag-chloride), and interim and concurrent reclamation.

2.3.14.2 Water Resources

Water resources in the Project area are monitored as part of Newmont's Maggie Creek Basin Monitoring Plan and Barrick's Boulder Valley Monitoring Plan. The monitoring programs have been developed in conjunction with Nevada Division of Water Resources (NDWR)/State Engineer to address groundwater, springs/seeps, and streams/rivers. The purpose of water monitoring is to establish baseline data and report changing conditions as mining and ore processing operations are conducted in the area.

Water quality, groundwater levels, and surface water flow will continue to be monitored in the area as required at designated monitoring wells, springs and seeps, and surface water stations. Monitoring reports will be prepared by Newmont to summarize water resource monitoring data collected. These reports are submitted periodically to NDWR/State Engineer, NDEP, and BLM.

**TABLE 2-7
Tentative Reclamation Schedule
Genesis Project**

Operation		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	
Activity	Location											
Backfill Mine Pits												
	Beast Pit	Approximately 95.4Mt of waste rock placed to an elevation 340 feet above existing pit crest.										
	Bluestar Pit	Approximately 46.5Mt of waste rock placed to an elevation 440 feet above existing pit crest.										
	Genesis Pit					Approximately 213.6Mt of waste rock placed to fill about 1,000 feet of pit and sloped to elevations from 5,310 to 5,650 amsl.						
Reclaim Waste Rock Disposal Facilities (WRDFs)												
	Beast WRDFs						Includes ripping, regrading and revegetation.					
	Bluestar WRDFs						Includes ripping, regrading and revegetation.					
		Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	
Reclaim Waste Rock Disposal Facilities (WRDFs), continued.												
	Genesis WRDFs	Includes ripping, regrading and revegetation.										
	Sec. 36 WRDFs		Includes ripping, regrading and revegetation.									
	Sec. 5 WRDFs			Includes ripping, regrading and revegetation.								
Construct Safety Berms												
	Genesis Pit	Approx. 9,500 ft										
	Bluestar Ridge			Approx. 300 ft								
Haul & Access Roads – Roads would be reclaimed when no longer needed to support mining and other related activities												
Monitoring												
	Vegetation											
	Water Quality											

Wildlife

Where possible, land clearing and surface disturbance would be timed to prevent destruction of active bird nests or disturbance of young birds during the avian breeding season (May 1 to July 15, annually) to comply with the Migratory Bird Treaty Act. If surface disturbing activities are unavoidable, Newmont would have a qualified biologist survey areas proposed for disturbance to identify active nests. If active nests are located, or if other evidence of nesting is observed (mating pairs, territorial defense, carrying nesting material, transporting of food), the area would be avoided to prevent destruction or disturbance of nests until the birds are no longer present. Avian surveys would be conducted only during the breeding season and immediately prior to Newmont's activities that would result in disturbance. After such surveys are performed, and disturbance created (i.e., road construction), Newmont would not disturb additional land during the avian breeding season without first conducting another avian survey in compliance with Migratory Bird Treaty Act (Newmont 2007a). In addition, Newmont must procure and adhere to numerous permits to ensure protection and preservation of wildlife. Although these requirements benefit wildlife, the BLM has not identified any change to impacts that affect these resources. Therefore, these requirements are not enumerated here.

In November 2008, representatives of NDOW, BLM, Newmont, and Barrick Gold of North America formed the Area 6 Mule Deer Working Partnership to identify mule deer issues from a landscape scale over the long term and to avoid addressing the issue on a project by project basis. The working group is developing habitat management practices to ensure maintenance and improvement of mule deer health, including herd migration capability and vegetation composition, in portions of NDOW Wildlife Management Units 067 and 068.

2.3.14.3 Cultural Resources

Cultural resource inventories have been completed for the Genesis Project area. No sites eligible for listing on the National Register of Historic Places would be affected. New sites that may be discovered during proposed surface disturbing activities or by future cultural inventories would either be avoided or mitigated by Newmont in accordance with 43 CFR 3809.420(8) and Section 106 of the National Historic Preservation Act (see Section 3.2.7 - Cultural Resources).

2.3.15 POST-CLOSURE MONITORING

2.3.15.1 Water Resources

Groundwater monitoring associated with the Genesis Project would be in accordance with and included as part of Newmont's ongoing Maggie Creek Basin Monitoring Plan (Newmont 1992). Surface water monitoring would continue until vegetation is established and/or until monitoring is determined by NDWR/State Engineer, NDEP, and BLM to no longer be necessary.

2.3.15.2 Vegetation

Reclamation goals for mining disturbances are to 1) establish stable landforms that control erosion, landslides, and water run-off, and 2) establish a productive vegetative community based on the designated post-mining land uses. The goal of revegetation would be to achieve as close to 100 percent

of the perennial plant cover of selected comparison areas as possible. The comparison, or reference, areas would be selected from representative plant communities adjacent to the mine site, test plots or demonstration areas or, as appropriate, representative ecological or range site descriptions.

2.4 ALTERNATIVES ELIMINATED FROM DETAILED ANALYSIS

This section described alternatives to the Proposed Action that were eliminated from further review in the EIS. These alternatives were identified by BLM during review and analysis of the Proposed Action. These alternatives were considered technically infeasible, unreasonable, provided no environmental advantage over the Proposed Action, or would not meet the purpose and need for the Proposed Action. The rationale for dismissing these alternatives is provided.

2.4.1 UNDERGROUND MINING

Underground mining was evaluated as an optional mining method for recovery of ore associated with the Proposed Action. Underground mining methods are typically used when extracting deep, high-grade ore usually found in veins or narrow zones.

Gold associated with the Genesis Project ore body is disseminated throughout a major portion of the rock mass. This type of ore body does not lend itself to underground mining methods because the volume of rock that would need to be removed and processed to recover the gold cannot economically be achieved without use of large-scale open pit mining methods.

Other factors that affect the method and cost of mining an ore reserve include continuity of the mineralized material, depth to mineralization, and volume of material to be mined. The mineralized zone in the proposed pit expansion area meets economic reserve requirements for open-pit mining methods largely due to the fact that it is an extension of an existing pit where a major portion of the overburden has been previously removed.

Development of the remaining ore reserves in the Genesis Pit by underground methods would be cost prohibitive and therefore economically unfeasible.

2.4.2 COMPLETE BACKFILL OF THE BLUESTAR RIDGE PIT

Under this alternative, Newmont would be required to backfill the Bluestar Ridge Mine Pit. The Bluestar Ridge Pit is the least economical of all proposed mining and would be the last site developed. As such, the pit would not be available to receive backfill until mining ceases.

Approximately 9Mt of waste rock and 4.4Mt of ore would be mined from the pit. Assuming an in-place rock density of 1.26 tons per cubic yard, the total volume of the Bluestar Ridge Pit at the end of mining would be approximately 10.6Mcy. Assuming a swell factor of 30 percent, approximately 7.42Mcy of waste rock would be required to backfill the pit.

The estimated cost of re-handling 7.42Mcy of waste rock would be \$1.50 per cubic yard or \$11.13 million. The cost of backfilling the Bluestar Ridge Pit would make mining the pit economically unfeasible.

2.4.3 GENESIS PIT HIGHWALL REDUCTION TO FACILITATE MULE DEER MIGRATION

Under this alternative, Newmont would be required to reduce a portion of the north highwall remaining in the Genesis Pit at the end of the mining operations to facilitate mule deer migration through the area. This alternative would involve placement of backfill against the northern highwall of the partially backfilled Genesis Pit at the end of mining. The backfill would be placed such that a 3.0H:1.0V slope configuration would be created linking the top of the highwall (pit rim) to the floor of the pit. Assuming that a portion of the northwest highwall receives this treatment, approximately 40 acres of land would be converted from highwall to a slope that would be revegetated. Approximately 4Mcy of waste rock would be rehandled by loading into haul trucks and dumped and graded to form the slope.

An optional method would involve blasting a portion of the highwall to create a slot through the highwall extending from the floor of the pit to the upper pit rim. The slot would be approximately 100 feet wide and sufficient waste rock would be placed in the slot to create a 3.0H:1.0V slope extending to the floor of the pit. This treatment would result in converting approximately one acre of land from highwall to a slope that would be revegetated.

This alternative was eliminated because the likelihood that mule deer would use this pathway during migration is unknown. In addition, the cost of rehandling approximately 4Mcy @ \$1.50/cy = \$4.5M would affect the economic feasibility of the mine development and require additional consumption of energy for dubious results.

2.4.4 ALTERNATIVE LOCATION FOR PAG CELLS

BLM received a request to consider alternative locations for PAG cells. The request did not identify any impact to any resources that might occur due to the proposed location of the PAG cells. During review, BLM could not identify any potential impact to any resource due to the proposed location of the PAG cells, therefore development of alternate locations was determined to be unnecessary.

2.4.5 PLACING PAG MATERIAL BELOW GROUNDWATER LEVEL

This alternative would require placement of PAG waste rock below the predicted post-mining groundwater elevation (5225 feet amsl). The Genesis Pit would be the only pit mined to an elevation below 5225 feet amsl, and therefore eligible to receive PAG rock backfill. Under this alternative Newmont would be required to revise proposed waste rock handling and management until mining operations in the Genesis Pit are complete and PAG rock could be placed. The temporary storage and rehandling of potentially millions of tons of waste rock would increase Newmont's costs, compared to the Proposed Action, and reduce the economic viability of the Project.

Geochemical modeling indicates no adverse impacts to groundwater or other resources would occur from PAG material placed in accordance with the Proposed Action. Therefore, there is no discernible potential benefit from the alternative and no reason to further analyze it.

2.5 COMPARISON OF ALTERNATIVES

The No Action Alternative is the only alternative considered due to the lack of resource impacts for which the analysis of alternatives would have been appropriate. Under the No Action Alternative, Newmont would not be authorized to use public land in its expanded operations as proposed. The lack of authorization may make the mining of the 60Mt of ore economically impractical, potentially leading to loss of employment and loss of tax revenues to local government. The No Action Alternative, under existing authorizations, would also mean the eventual creation of a pit lake in the Genesis Pit as groundwater rebounds to pre-mining levels. A comparison of the Proposed Action and No Action Alternative is contained in **Table 2-8**. Potential impacts resulting from implementation of the Proposed Action and applicant proposed environmental protection measures are also summarized in **Table 2-8**.

2.6 BLM PREFERRED ALTERNATIVE

The BLM has identified a preferred alternative based on the analysis in this EIS. This preferred alternative is the alternative that best fulfills the agency's statutory mission and responsibilities, considering economic, environmental, technical, and environmental protection measures (**Table 2-8**). The Proposed Action has evolved over the course of BLM's review of the POO under 43 CFR 3809 regulations and the environmental impact analysis during compilation of the EIS including waste rock management, growth media replacement volumes and sources, and reclamation regrading and contours. The BLM has determined that the preferred alternative is the Proposed Action as outlined in Section 2.3 of this chapter.

The Proposed Action includes mining of 450Mt of waste rock, including an estimated 28Mt of PAG rock, expansion of the Section 36 and Section 5 Waste Rock Disposal Facilities, backfilling the Beast and Bluestar pits and partial backfilling of the Genesis Pit, including cells constructed for the express purpose of isolating PAG rock from meteoric water and groundwater. The Proposed Action also includes an Adaptive Management Plan for waste rock which provides for supplementary testing of waste rock geochemistry and a design for management/encapsulation of up to 128Mt of PAG waste rock, more than 100Mt than is presently expected. The Proposed Action includes mining 60Mt of ore, of which 48Mt is destined for the North Area Leach Facility, adjacent to the Genesis-Bluestar Operations Area, and 12Mt is destined for the Mill 5/6 located at the South Area Operations Area just north of Carlin, Nevada. The Proposed Action would eliminate the potential for development of a pit lake in the Genesis Pit which would have occurred under the No Action Alternative and would restore an additional 300 acres of land surface to productive use. In addition, the Proposed Action would provide employment for most of the work force currently tasked to the Genesis-Bluestar Operations Area. The Project would provide long-term operations in this area, with consequent potential for stable employment levels over the twelve-year mine life. The proposed Genesis Project would not result in hiring new employees, but would extend the mine-life and therefore average annual employment of approximately 687 of Newmont's Carlin Trend work force. Continued mine employment at the Genesis Project would maintain quality-of-life for workers and their families.

TABLE 2-8 Potential Impacts and Applicant Proposed Environmental Protection Measures Genesis Project			
Resource	Potential Impact		Applicant Proposed Environmental Protection Measures
	Proposed Action	No Action	
Mining Operations	Removal of 450Mt of waste rock and 60Mt of ore over a twelve-year mine life.	Approximately 2.6Mt of run-of-mine oxide ore will be placed on the North Area Leach Facility. Newmont does not anticipate processing any oxide mill or refractory ore during the remaining mine life under authorized operations.	Waste Rock Management Plan
	Backfill of additional 300 acres of mine pits leaving 150 acres of open pits	About 450 acres remaining as open pits	
	Elimination of pit lake	Formation of pit lake of about 41 acres	
Reclamation Activities	Revegetation of additional 300 acres that would have remained as open pits	About 450 acres of open mine pits would remain and not be revegetated	Revegetation plan calls for use of native grass, forb, and shrub species
	All disturbed areas not currently under reclamation would be covered with 2-feet of Carlin Formation growth media.	Disturbed areas would be reclaimed in accordance with existing approved plans.	Tops of waste rock disposal facilities would be regraded to provide undulations and topographic relief to blend with surrounding undisturbed areas.
Air Quality	Sulfur dioxide (SO_2), carbon monoxide (CO) oxides of nitrogen (NO_x), volatile organic compounds (VOCs) and particulate emissions would continue over the twelve-year life of the Genesis Project.	Gaseous and particulate emissions described under the Proposed Action will continue to be generated until currently permitted mining activities cease in 2010.	Monitoring of gaseous emissions (SO_2 , CO , and NO_x) is not required by existing NDEP Air Quality Operating Permit issued for Newmont's North Area Operations (AP 1041-0402.02).
	Fugitive dust would be produced during mine operations and from wind blowing over exposed or disturbed surfaces.	Fugitive dust sources would continue for the remaining life of operations.	Fugitive emissions would be controlled using BMPs as defined by the Nevada State Conservation Commission (1994). Dust emissions would be controlled through use of water, approved chemical binders or wetting agents, dust collection devices, water sprays, and revegetation of disturbed areas concurrent with operations.

**TABLE 2-8
Potential Impacts and Applicant Proposed Environmental Protection Measures
Genesis Project**

Resource	Potential Impact		Applicant Proposed Environmental Protection Measures
	Proposed Action	No Action	
Greenhouse Gas	Approximately 65,000 tons of would be emitted annually from approximately 5.87 million gallons of annual diesel fuel consumption	Approximately 4,100 tons of would be emitted annually from consumption of 370,000 gallons of diesel fuel	Emissions would be controlled through proper operation and maintenance of equipment
Mercury Emissions	Processing 4.0Mt of oxide mill ore annually on the North Area Leach Facility and 837,500 tons of refractory ore (annually) from the Genesis Project would emit a total of 51.2 pounds of mercury annually.	No oxide mill or refractory ore will be mined at Genesis or processed at Mill 6 during the remaining mine life (ending 2010).	No emission standards for mercury have been adopted for gold processing operations. Newmont will continue to comply with NDEP guidelines.
Geology and Minerals	Waste rock associated with the proposed Genesis Project would be used to backfill mined-out pits or placed in waste rock disposal facilities. Depending on residual ore reserves in individual mine pits, backfilling of mined-out pits at current gold prices would result in limiting access to remaining ore reserves. Placement of waste rock generated from the Genesis Project would not result in decreased stability of existing disposal facilities in the Project area.	Approximately 2.6Mt of run-of-mine oxide ore will be mined over the remaining life of mine ending in 2010. Newmont does not anticipate processing any oxide mill or refractory ore during the remaining mine life under authorized operations.	
	Partial backfilling of the Genesis Pit would eliminate formation of a pit lake.	A pit lake (about 41 acres) would begin to form in the Genesis Pit approximately 100 years after cessation of mine dewatering activities at the Leeville, Betze/Post, and Gold Quarry mines.	
	Backfilling mine pits would provide a net increase of about 300 acres that would be reclaimed as wildlife habitat and livestock grazing.	Under current authorization and closure plans approximately 450 acres of mine pits will remain open.	

TABLE 2-8 Potential Impacts and Applicant Proposed Environmental Protection Measures Genesis Project			
Resource	Potential Impact		Applicant Proposed Environmental Protection Measures
	Proposed Action	No Action	
Geology and Minerals (continued)	PAG waste rock would be encapsulated in cells constructed within backfilled portions of mine pits and in the Section 5 and Section 36 Waste Rock Disposal facilities.	PAG waste rock will be placed in an encapsulation cell constructed at the Section 36 Waste Rock Disposal Facility.	A quarterly waste rock management report that summarizes mining progress, monitoring, and disposition of waste rock would be submitted to BLM and NDEP.
Water Quantity and Quality	The Proposed Action would not result in a modification of surface water conditions in the Project area. No perennially or ephemeral flowing streams or drainages are located within the footprint of the Proposed Action.	No perennial or ephemeral flowing streams or drainages are located within the footprint of existing permitted activities.	Existing diversion channels, sediment basins, and other surface water (sediment) control structures have been constructed to control storm water run-on/run-off; Sediment control structures include silt traps and fences using certified weed free straw, hay bales, or geotextile fabric, and sediment ponds.
	Groundwater that would be pumped (up to 250 gpm) for the proposed Genesis Project is compartmentalized groundwater and not in direct contact with the regional groundwater system. Groundwater pumped from this location is not expected to alter the general regional groundwater condition that is being affected by large-scale dewatering systems currently operating at the Betze/Post, Leeville, and Gold Quarry mines.	The existing Genesis Pit lies within the groundwater drawdown area resulting from ongoing dewatering activities at Betze/Post, Leeville, and Gold Quarry mines.	Water resources in the Project area are monitored as part of Newmont's Maggie Creek Basin Monitoring Plan and Barrick's Boulder Valley Monitoring Plan. The monitoring programs have been developed in conjunction with the NDWR/State Engineer to address groundwater, springs/seeps, and streams/rivers.

**TABLE 2-8
Potential Impacts and Applicant Proposed Environmental Protection Measures
Genesis Project**

Resource	Potential Impact		Applicant Proposed Environmental Protection Measures
	Proposed Action	No Action	
Water Quantity and Quality (continued)	Partial backfilling of the Genesis Pit would eliminate formation of a pit lake; thereby reducing water loss through evaporation. Groundwater would eventually become reestablished in the lower portion of pit backfill, but is expected to be similar to surrounding groundwater quality because the rock would be non-PAG.	A pit lake (about 41 acres) would begin to form in the Genesis Pit approximately 100 years after cessation of regional mine dewatering. This lake would be a source of water loss (evaporation) and potentially degraded water quality that could eventually mix with natural groundwater.	Monitor groundwater and surface water quality in accordance with Maggie Creek Basin and Boulder Valley Monitoring Plans
Soil Resources	<p>Proposed Genesis Project would result in 43 acres of new disturbance. Impacts include:</p> <ul style="list-style-type: none"> ○ soil loss during salvaging, when growth media is stockpiled and stabilized in stockpile areas; ○ loss between final redistribution and completion of reclamation; ○ modification of chemical and physical characteristics; ○ wind erosion; and ○ decreased biological activity. <p>All disturbed areas not currently under reclamation would be covered with 2-feet of Carlin Formation growth media.</p>	<p>Impacts associated with the Proposed Action would not occur. Existing growth media (approximately 622,000 cubic yards) would be placed over areas with coarse material and little or no fines. Areas with adequate fines would be direct seeded.</p>	<p>Direct haul and place growth media on regraded disturbed areas where possible.</p> <p>Revegetate growth media stockpiles during first appropriate season. Soil excavated from sediment retention ponds would be placed in stockpiles or spread over regraded areas.</p> <p>Sediment control structures would remain active during the post-closure period until such time as reclamation has stabilized and their use is no longer required.</p> <p>Reclaimed areas would be routinely inspected to assess vegetation establishment and the effectiveness of erosion control. Where warranted, maintenance would be employed to promote vegetation reestablishment and repair erosional features.</p>

**TABLE 2-8
Potential Impacts and Applicant Proposed Environmental Protection Measures
Genesis Project**

Resource	Potential Impact		Applicant Proposed Environmental Protection Measures
	Proposed Action	No Action	
Vegetation (Including Invasive, Non-native Species)	Approximately 43 acres of new disturbance associated with the Genesis Project.	No new disturbance	Revegetation plan calls for use of native grass, forb, and shrub species. Planting and seeding techniques would be coordinated with BLM and NDOW at closure.
	In-pit backfill would provide a net increase of approximately 300 acres in land surface that would support wildlife habitat and livestock grazing.	About 450 acres of open mine pits would remain and not be revegetated.	
	The Bluestar Ridge Pit (26 acres) would not be backfilled and remain as an open pit following completion of mining operations.	Bluestar Ridge Pit would not be developed.	
	Approximately 17 acres associated with haul roads and exploration activity would be revegetated.	Disturbance (17 acres) associated with access and haul roads would not occur.	
	Invasive, non-native species may spread to newly disturbed areas. Ongoing weed control program would limit impacts.	Invasive, non-native infestations will be monitored and controlled under ongoing weed control program.	Newmont would conduct annual weed surveys to direct weed control efforts. Weed control efforts would continue for the life-of-mine and reclamation period to reduce potential impacts of new infestations. Certified weed free straw bales would be used for sediment control.
	No impacts to special status plants.	No additional impact to special status plant species or their habitat would occur.	

**TABLE 2-8
Potential Impacts and Applicant Proposed Environmental Protection Measures
Genesis Project**

Resource	Potential Impact		Applicant Proposed Environmental Protection Measures
	Proposed Action	No Action	
Terrestrial Wildlife, Special Status Species, Migratory Birds	Proposed Project would affect 43 acres of sagebrush/grassland habitat.	Impacts associated with 43 acres of sagebrush/grassland would not occur.	Concurrent reclamation of disturbed areas where possible. Especially as it relates to enhancing big game movement through the area. Reclamation that will begin to reverse the percentage of lower value habitat that will remain at end of mine life,
	Minimal impacts to special status wildlife species due to lack of water and habitat available.	No additional impact to special status wildlife species or their habitat would occur.	
	In-pit backfill of open mine pits would provide a net increase of about 300 acres capable of supporting wildlife habitat, livestock grazing, and provide transitional habitat linkage to winter range. 124 acres of land surface would remain as highwall that could support wildlife species. The proposed project would extend area habitat fragmentation for another twelve years. Loss of 43 acres of breeding habitat for migratory birds (including raptor species). Net increase of lower value habitat that could modify species use patterns from historic pre-mine usage. Potential use of mule deer utilizing the new Section 36 and Bluestar Ridge haul roads.	About 450 acres of open mine pits would remain and not be revegetated.	

**TABLE 2-8
Potential Impacts and Applicant Proposed Environmental Protection Measures
Genesis Project**

Resource	Potential Impact		Applicant Proposed Environmental Protection Measures
	Proposed Action	No Action	
Social and Economic Resources	The proposed Genesis Project would not result in hiring new employees, but would provide long-term operations in this area, with consequent potential for stable employment levels for an annual average of 687 workers over the twelve-year mine life.	Closure of the Genesis-Bluestar Operations Area would likely reduce the work force beginning about 2010. Loss of 687 jobs annually over a twelve-year mine life. Actual effects of laid off workers would depend on the timing and availability of other employment in the area when layoffs occur.	
	Provide \$54 million in annual wages for the area over the lifetime of the Project. Support continuation of about 584 secondary jobs in Elko and Eureka counties' economy during the twelve years of operation, providing an additional \$23 million of indirect and induced wages annually.	Reduced wages spent in the local economy, decreased revenue to local and state jurisdictions, increased stress on public assistance programs, and decreased quality-of-life for some residents.	
	Sales, property, and net proceeds taxes would continue to be paid to Elko and Eureka counties. Continued mine employment at the Genesis Project would maintain quality-of-life for workers and their families.		