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Chapter 2 Proposed Action and Alternatives

2.1 Introduction

This chapter describes and compares the Proposed Action, two action alternatives, and the No Action Alternative, as required by 40 CFR 1502.15 (d). Each component or area of expansion is described in sufficient detail to facilitate understanding of each alternative. Figures are included that clearly show the current exploration activities and proposed mine plan.

In addition to the Proposed Action, two alternatives are considered in the EIS, which are based upon issues identified by the BLM, Midway, and public comments received during the public scoping process. These alternatives are intended to reduce or minimize potential impacts associated with the Proposed Action. Descriptions of additional alternatives that were initially considered but eliminated from further study are also provided. A No Action Alternative is also analyzed to provide a benchmark enabling decision makers to compare the environmental effects of the action alternatives.

2.2 Existing Operations

Midway is presently conducting exploration activities permitted under the 2010 Pan Exploration Project Plan of Operations Amendment (Case File Number NVN-078305), and Reclamation Permit Application Modification (Permit No. 0228) (Midway, 2012) authorized by a DR/FONSI dated July 2011 (BLM, 2011a). The 2010 exploration plan area includes approximately 100 acres of authorized surface disturbance. Of the 100 authorized acres, approximately 25 acres has been disturbed as shown on Figure 2.2-1. The authorized exploration operations for the project are ongoing and include the following:

- Road building (main access road and drill roads);
- RC and core exploration drilling and drill pad construction;
- Trench excavation and borehole augers for obtaining bulk metallurgical samples and soil samples;
- Construction and monitoring of groundwater wells;
- Development of a staging area for temporary storage of drilling materials and equipment; and
- Provision of temporary portable sanitation facilities.

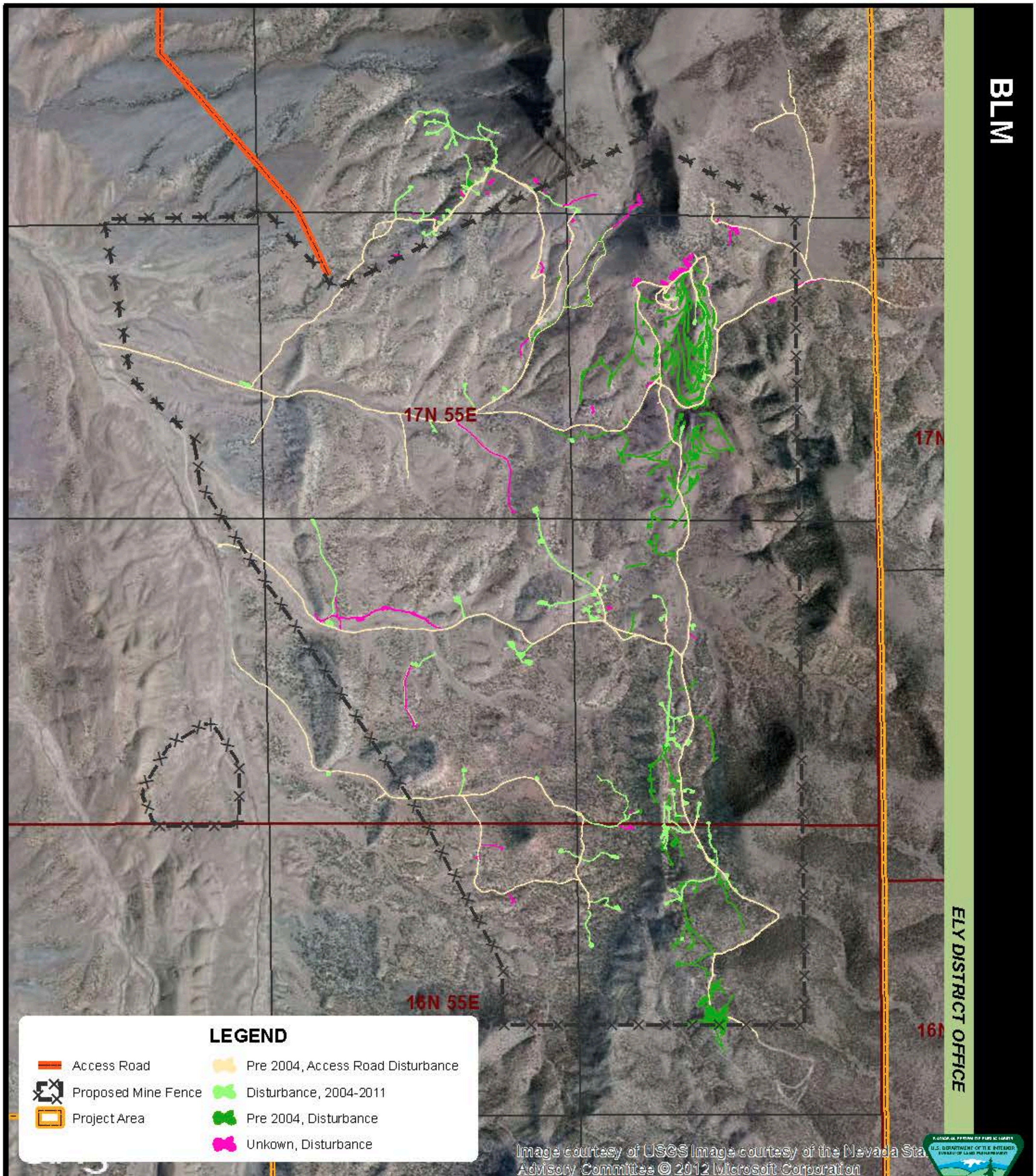

FIGURE 2.2-1
EXISTING DISTURBANCE

MIDWAY GOLD US, INC.
PAN MINE PROJECT

SCALE: 1 inch = 2,400 feet

DATE DRAWN: JAN. 4, 2013

0 1,200 2,400 4,800 Feet

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2.3 Proposed Action

The project area and proposed disturbance areas for the Proposed Action are shown on Figure 2.3-1. Table 2.3-1 provides the proposed disturbance acreage for each component of the Proposed Action as well as the currently authorized disturbance. “Inter-facility disturbance” is all of the areas between the other mine components and will be assumed to be subject to disturbance during the life of the operations. Figure 2.3-1 also shows the location of a fence around the disturbance area to preclude access by the public and livestock.

Table 2.3-1 Summary of Proposed Disturbance within the Project Area

Component	Authorized Disturbance (acres)	Proposed Action Disturbance (acres)	Re-Categorized Acres[1]	Total Disturbance (acres)
Open Pits				
South Pan Pit	0	247	-	247
North Pan Pit	0	92	-	92
Black Stallion Pit	0	13	-	13
South Syncline Pit	0	3	-	3
Syncline Pit[2]	0	0	-	0
North Syncline Pit[2]	0	0	-	0
WRDAs				
South	0	216	-	216
North	0	264	-	264
Other				
Roads[3]	21	160	-	181
Heap Leach Facility	0	321	-	321
Process Facilities	0	18	-	18
Process Ponds	0	15	-	15
Yards	0	15	-	15
Exploration	79	217	66	230
Ancillary Facilities	0	359	-	359
Inter-facility Disturbance	0	1,214	-	1,214
Transmission Line[4]	0	-	-	16
Total	**100**	**3,154**	**66**	**3,204**

WRDA = Waste Rock Disposal Area

[1] “Re-categorized” refers to acres that were originally carried in one disturbance category, and were transferred to another disturbance category. Most of the re-categorized acres were in the areas of the North Pan Pit, South Pan Pit, and the North and South WRDAs. Other disturbance acres re-categorized include roads, crushing facilities, laydown areas, and ancillary facilities, etc.

[2] These pits would be covered with other facilities by the end of mining, so the total disturbance presented in this table does not include these pits.

[3] Includes the access, haul, and secondary roads.

[4] Transmission line acres accounted for in a Plan of Development submitted by Mt. Wheeler Power

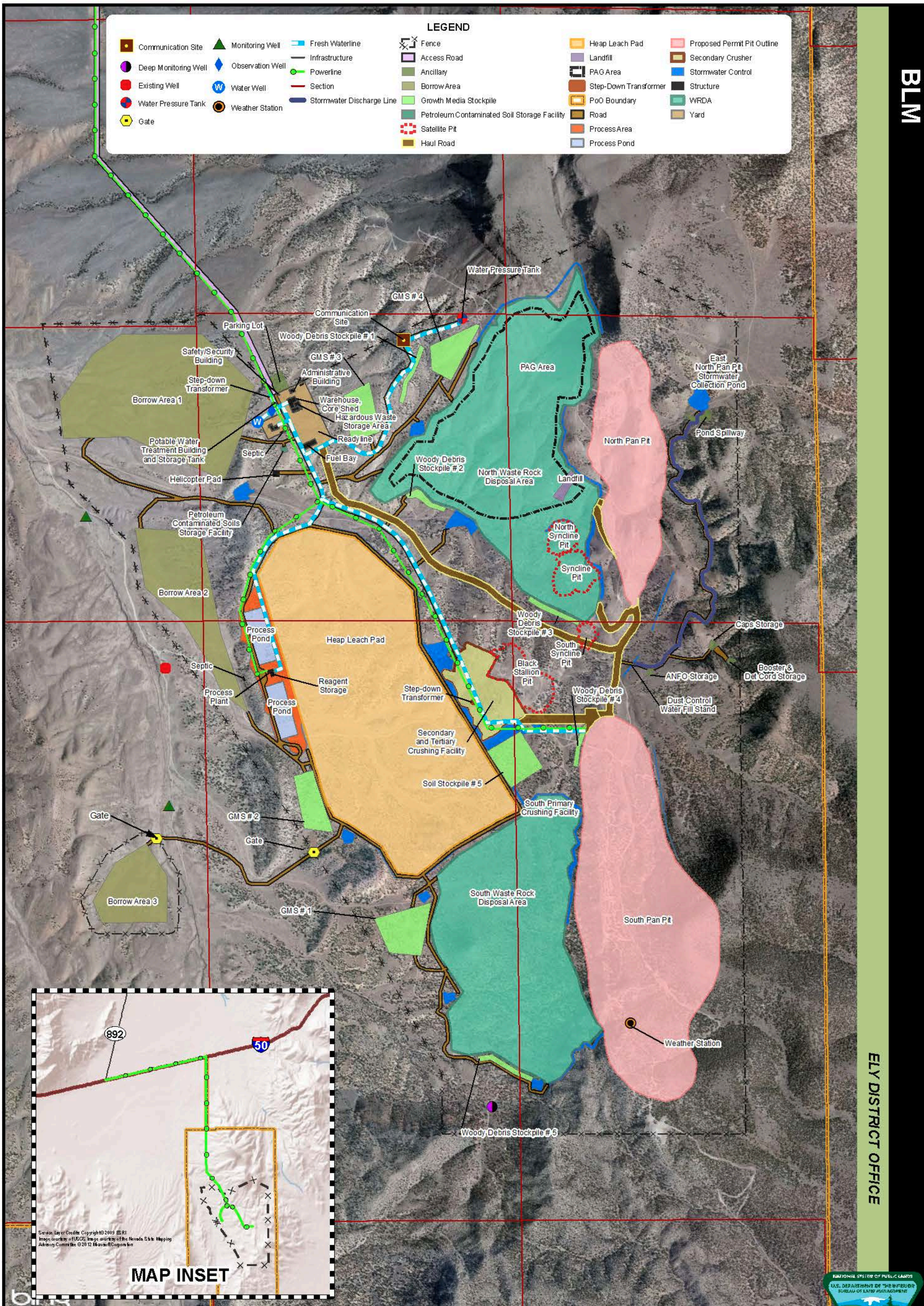

FIGURE 2.3-1 PROPOSED FACILITIES

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PAN MINE PROJECT

SCALE: 1 inch = 1,600 feet

DATE DRAWN: JAN.4, 2013

0 800 1,600 3,200 Feet

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The overall project schedule is divided into a series of phases, some of which would overlap as shown in Table 2.3-2. Permitting of the project is expected to take approximately two years. After all permits are obtained, construction, including pre-stripping in required areas, South Pan Pit development, South WRDA construction, heap leach pad construction, and construction of ancillary facilities is estimated to take 6 to 9 months. Heap leaching is expected to begin about year one and is intended to continue beyond the end of mining. Heap leach closure and reclamation would require approximately three years, ending at about year 18. Mining would begin in year one and would take approximately 13 years to complete. Reclamation of mining disturbances would be roughly coincidental with construction commencing at the start of construction and continuing for 14 years following the cessation of mining. Operation of the heap leach would continue for three years following the cessation of mining at which point closure of the heap leach facilities would commence to prepare the leach facilities for reclamation. Heap leach reclamation would take approximately three years. Monitoring and maintenance of the reclaimed site would extend for 30 years following final reclamation work.

Table 2.3-2 Estimated Conceptual Timeline for Pan Mine Project

Activity	Start (year)	Duration (years)	End (year)
Permitting	2	2	0
Construction	0	1	1
Mine Operations	1	13	14
Mine Reclamation	0	18	18
Leach Operations	1	14	15
Leach Closure	14	4	18
Leach Reclamation	15	3	18
Post Mining Monitoring and Maintenance	18	30	48

The following sections describe the components of the Proposed Action in detail.

2.3.1 Roads

As previously evaluated in the Exploration EA (BLM, 2011b), authorized activities for the project include constructing a main exploration project temporary access road connecting the Proposed Action area with U.S. Highway 50 and multiple on-site exploration drill roads. This main access road extends approximately five miles south and southeast from U.S. Highway 50 to the project site and was developed within a 200- to 400-foot wide corridor. The authorized main exploration project access road was constructed in 2012. It has a road surface width of 16 feet and an average disturbance width (includes all cuts and fills) of 32 feet for a total disturbance of approximately 20 acres.

The on-site exploration roads and drill pads are used to access the multiple drilling locations. The currently authorized acres of disturbance for exploration roads and drill pads are 79 acres. The exploration roads and spurs are bladed to an average width of 15 feet including side cast material, with waterbars installed as needed. Every effort would be made to keep road grades at ten percent or less although steeper grades are necessary for short pitches. The individual drill pads are typically approximately 2,100 square feet. Exploration would continue under the Proposed Action with an additional 200 acres of drill roads and pads.

The location of the Proposed Action access road would maintain the same alignment as the main exploration project access road; however, the roadway would be widened to a 32-foot wide running surface, a 90-foot total average disturbance width, and a total disturbance of approximately 53 acres.

Proposed Action haul and secondary roads would have a total disturbance of approximately 129 acres. Haul road running surfaces would be approximately 80 feet wide to accommodate haul trucks and conveyors. Haul roads would be bermed in accordance with Mine Safety and Health Administration (MSHA) regulations and best management practices (BMPs) would be used to control erosion. Temporary ramps, secondary roads, and haul roads would be used for the WRDAs. Secondary road surfaces would be approximately 30 feet in width. The actual road disturbance width may be wider, depending on topography and final cut and fill dimensions.

Reclamation activities associated with roads is discussed in Section 2.3.13.

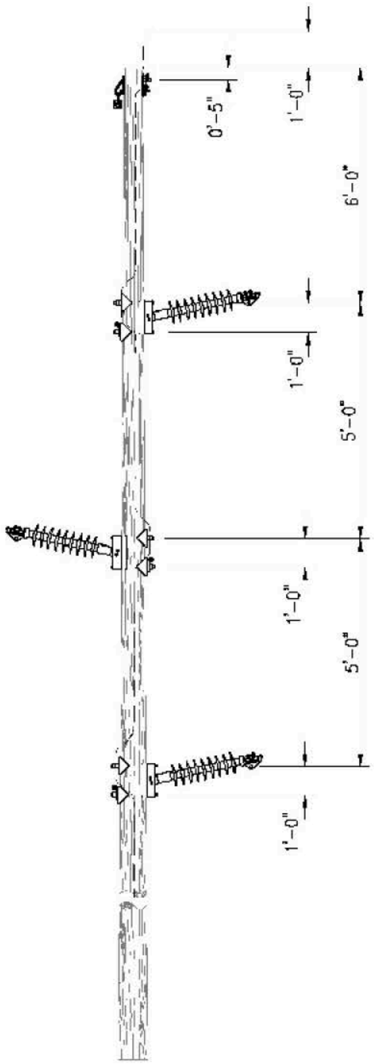
2.3.2 Power Line

As part of the Proposed Action, Mt. Wheeler Power would supply electrical power to the project. A 69 kilovolt (kV) transmission line would ultimately connect to the Falcon to Gondor power line located approximately six miles north of Strawberry Road and U.S. Highway 50. The new 69 kV line would be built from El Dorado junction at Strawberry Road and U.S. Highway 50, then east along U.S. Highway 50 (south of the Highway 50 ROW fence) to the mine access road, and south into the project area along the side of the mine access road. The approximately length of the power line is 8.5 miles. The new 69 kV line would be constructed parallel to the access road (Figure 2.3-1). The power line would consist of three conductors and one static line that would be supported with monopole structures that would be approximately 50 to 55 feet high (Figure 2.3-2). Construction of this power line and maintenance road would disturb approximately 15.83 acres (MWP, 2012).

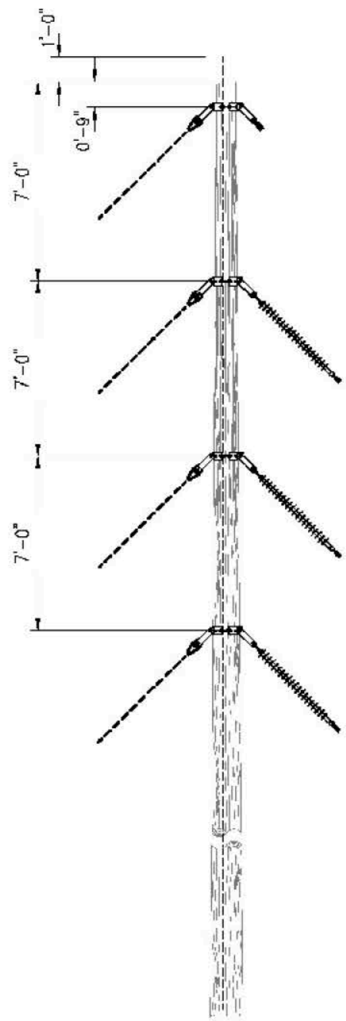
The portion of the power line from the intersection of Strawberry Road and U.S. Highway 50 to the mine site is considered a connected action and will be evaluated in this EIS. The rest of the 69 kV line north of U.S. Highway 50 is a separate project by Mt. Wheeler Power and will be evaluated in a separate NEPA document.

Two step-down transformers would be located in the project area. One would distribute power to the process plant and support buildings while the other would distribute power to the crushing facilities. The location of these step-down transformers is shown on Figure 2.3-1.

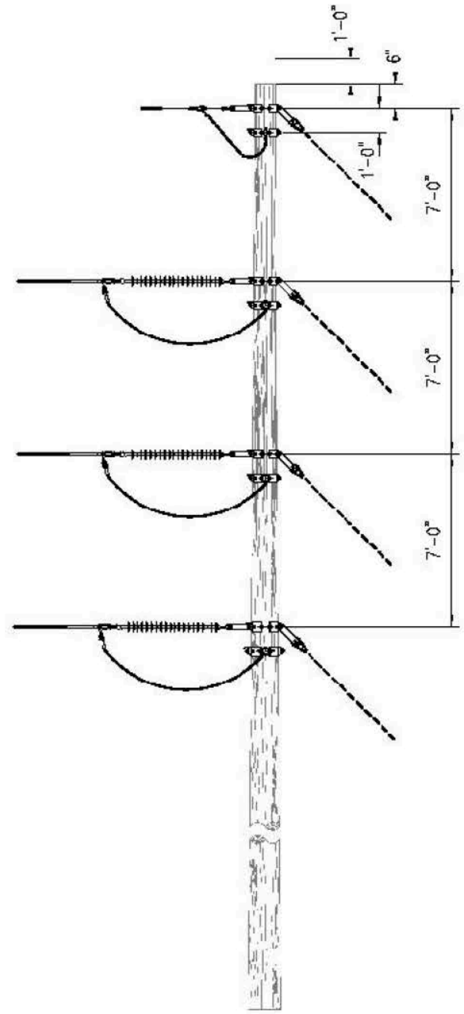
An emergency generator would be located at the process plant to maintain solution circulation and emergency operations support in the event of temporary power loss. Fuel storage would be



Single Circuit Tangent Structure



Single Circuit Running Angle Structure



Single Circuit Dead Structure

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FIGURE 2.3-2
69 kV TRANSMISSION LINE STRUCTURES

MIDWAY GOLD US, INC.
PAN PROJECT

Drawing Source	Plan of Operations
Drawn By	SRK Consultants
Date Drawn	October 2011

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located next to the generators in secondary containment with 110 percent containment of the largest tank or tank in a series, or in a double-walled tank.

2.3.3 Open Pits

Conventional open pit mining methods (truck and shovel/loader) would be used to extract ore and waste from the proposed open pits. Rock would be drilled and blasted using ammonium nitrate and fuel oil (ANFO), or other appropriate blasting agents as determined by the rock characteristics. All explosives would be handled in accordance with MSHA and Bureau of Alcohol, Tobacco, Firearms, and Explosives (BATFE) regulations. Blasting materials would be kept in secure explosives magazines. One blast per day is anticipated, and the total amount of explosives used would vary depending on the size of the working face of the pit.

Mining would start in the North Pan Pit and materials would be used for the heap leach pad construction material (over and under-liner). The South Pan Pit would be the first ore production pit. After approximately three years, the upper ore body at the South Pan Pit would be exhausted and ore production would move to the North Pan Pit. While the North Pit is producing ore, waste rock would be excavated from the South Pan Pit to uncover a lower ore zone. Near the completion of mining the North Pan Pit, the South Pan Pit would be placed back into ore production. Some mining of ore in both pits would occur during the life of the mine in order to obtain a suitable blend of ores for the heap leaching process. The four satellite pits would be mined concurrently with or prior to the South Pan Pit. The Syncline and North Syncline satellite pits would be backfilled with waste rock in anticipation of being covered by the North WRDA. The Black Stallion and South Syncline satellite pits would also be backfilled with waste rock.

Mined ore would be hauled via truck to the primary crusher located between the North Pan and South Pan pits. Ore would be directly deposited into the primary crusher or stockpiles adjacent to the crusher. Ore from stockpile would be fed via loaders or other equipment into the crusher. Run-of-mine waste rock would be transported by truck to the WRDAs. Ore would be transported by conveyor from the primary crusher to the secondary and tertiary crushers. Fine crushed ore would then be placed on the leach heap via conveyors. The haulage-ways have been sized to accommodate haul trucks and conveyors.

Ore production is planned at a nominal rate of 17,000 tons per day (tpd), equivalent to 6.2 million tons per annum. Mining is scheduled for 13 years on a seven-day per week schedule, with two 12-hour shifts per day. Peak ore and waste production is scheduled at 60,814 tpd. Average life-of-mine stripping ratio is projected to be about 1.79:1 waste to ore. This can, however, vary with economics. Table 2.3-3 is a list of mining equipment that may be used during peak mining years.

Table 2.3-3 List of Proposed Mobile Equipment

Unit	Quantity
Front-end Loaders /Hydraulic Shovel	2
Rear-dump Trucks	6
Track-mounted Blast Hole Drill	3
Bulldozers	2
Wheel Dozer	1
Backhoe Loader	1
Small Loader	1
Excavator/Track Hoe	1
Skid steer	2
Graders	1
Forklifts	5
Telehandler (Large Fork Lift)	1
Crane 35-ton	1
ANFO Truck	1
Water Truck 20,000 gal	1
Service/Tire Trucks	1
Flatbed Truck	1
Utility Truck (RO)	1
Pickup Trucks	16
Sand Truck/Snow Plow	1
Light Plants	6
Pumps	1

Geological, geotechnical, and safety constraints have and would dictate the ultimate pit designs. Rock mass stability analyses indicate high safety factors for slopes developed in massive limestone, siltstone and shale, high-carbonate material such as limestone, and the breccia bodies. Structural evaluations to date have concluded that rock joints and planes are generally oriented favorably for slope stability (Golder, 2011). Operational and post-closure open pit slope configuration would be controlled by several parameters and include the geometry of the orebody, geologic and geotechnical characteristics of the host rock, equipment constraints, and safe operating practices. As mining progresses, an ongoing geotechnical program would be conducted to confirm the assumptions made during open pit design. Pit slope inter-ramp angles are expected to average 45 to 50 degrees, but overall slope angles would be less due to inclusion of haul roads. As no new geologic formations are expected to be encountered under the Proposed Action, slope angles for the expanded portions of the pits are expected to remain within the same ranges. The production benches in all pits would be 20 to 30 feet high on average, developed in a triple bench configuration resulting in 60 vertical feet between catch benches. Catch bench widths are expected to average 30 feet. Bench heights may vary depending upon mining requirements or rock geotechnical properties.

Open pit design is based on review of previous pit mining data combined with the results of geotechnical testing and surface mining industry/MSHA standards. Geologic structural mapping and open pit wall monitoring would be performed to optimize the open pit design and to help ensure pit stability during operations. Final pit contours are designed to incorporate changes in slope that occur over long periods of time. Midway would continue to monitor pit wall stability throughout the active life of each open pit according to the parameters set forth by the engineer providing pit slope stability design. Monitoring generally includes periodic surveying of pit wall surfaces to identify movement or deflection relative to benchmarks set outside the geotechnical influence of the pit.

A typical cross-section of a pit is presented on Figure 2.3-3, and a summary of basic design parameters and dimensions for the proposed pits are shown in Table 2.3-4.

Table 2.3-4 Pit Design Parameters and Dimensions Summary

Open Pit	Slopes (degrees)	Length (feet)	Width (feet)	Depth (feet)	Pit Bottom Elevation (feet AMSL)
North Pan Pit	45	2,500	1,000	480	6,150
South Pan Pit	45	4,100	400-1,000	580	6,150
Black Stallion Pit	45	1,360	770	240	6,440
North Syncline Pit	55	550	500	180	6,520
Syncline Pit	55	750	800	180	6,520
South Syncline Pit	40	450	340	110	6,520

AMSL = above mean sea level

2.3.4 Waste Rock Disposal Areas

Under the Proposed Action, two WRDAs (North WRDA and South WRDA) would be constructed. The four satellite pits would be backfilled with waste rock. The WRDAs would be constructed by end-dumping from haul trucks. These areas were selected for haul road accessibility (e.g., distance and gradient), low mineral potential, and geotechnical requirements. The final configurations of both WRDAs have been designed to blend with the surrounding topography with a stable hydrologic configuration to improve surface run-off. The final surface would also prevent ponding of water, promote long-term stability, and limit erosion and channel scour over time.

Mining is anticipated to generate approximately 129.3 million tons of waste rock, which would be placed in the North WRDA (62.2 million tons) and the South WRDA (60.3 million tons), and backfilled into the satellite pits (6.8 million tons). The North Syncline Pit would be backfilled with about 0.7 million tons, the Syncline Pit would be backfilled with about 1.7 million tons, the South Syncline Pit would be backfilled with about 0.2 million tons, and the Black Stallion Pit would be backfilled with about 4.2 million tons.

Vegetation would be cleared from the WRDA footprints; coarse woody debris and plant growth medium would be salvaged and placed in the separate stockpiles. In general, the WRDA slopes would be geomorphically designed, constructed, and reclaimed to 3H:1V (Horizontal:Vertical), with small areas of slightly steeper slopes as shown in Figure 2.3-4. Where feasible, the WRDAs would be built as benched structures to facilitate recontouring and reclamation. The

North and South WRDA benches would be designed approximately 190 and 160 feet high respectively with an offset for each bench to provide for overall final regrade lines, except in

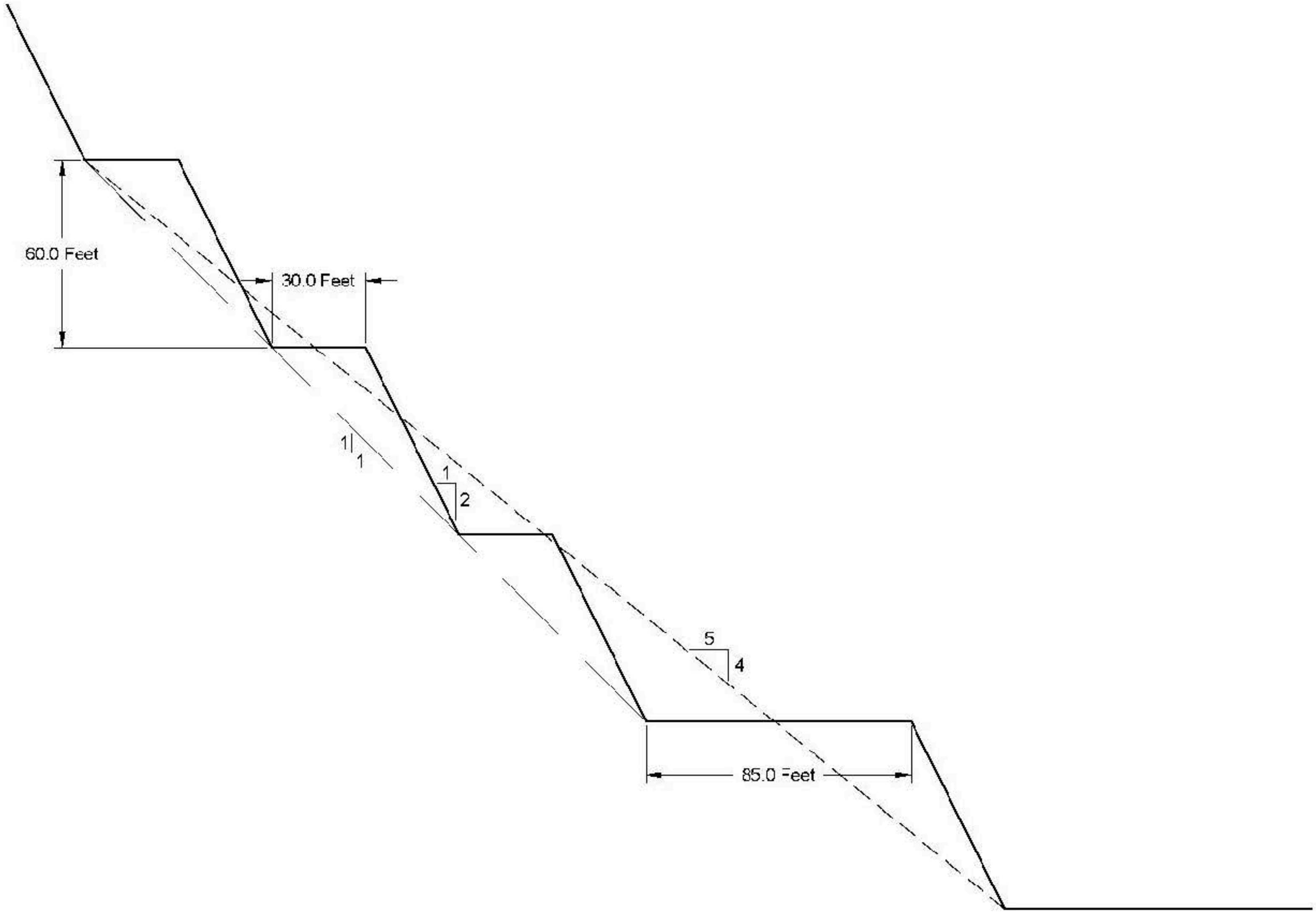

FIGURE 2.3-3
TYPICAL CROSS SECTION OF MAIN PITS

MIDWAY GOLD US, INC.
PAN PROJECT

Drawing Source Plan of Operations
Drawn By SRK Consultants
Date Drawn October 2011

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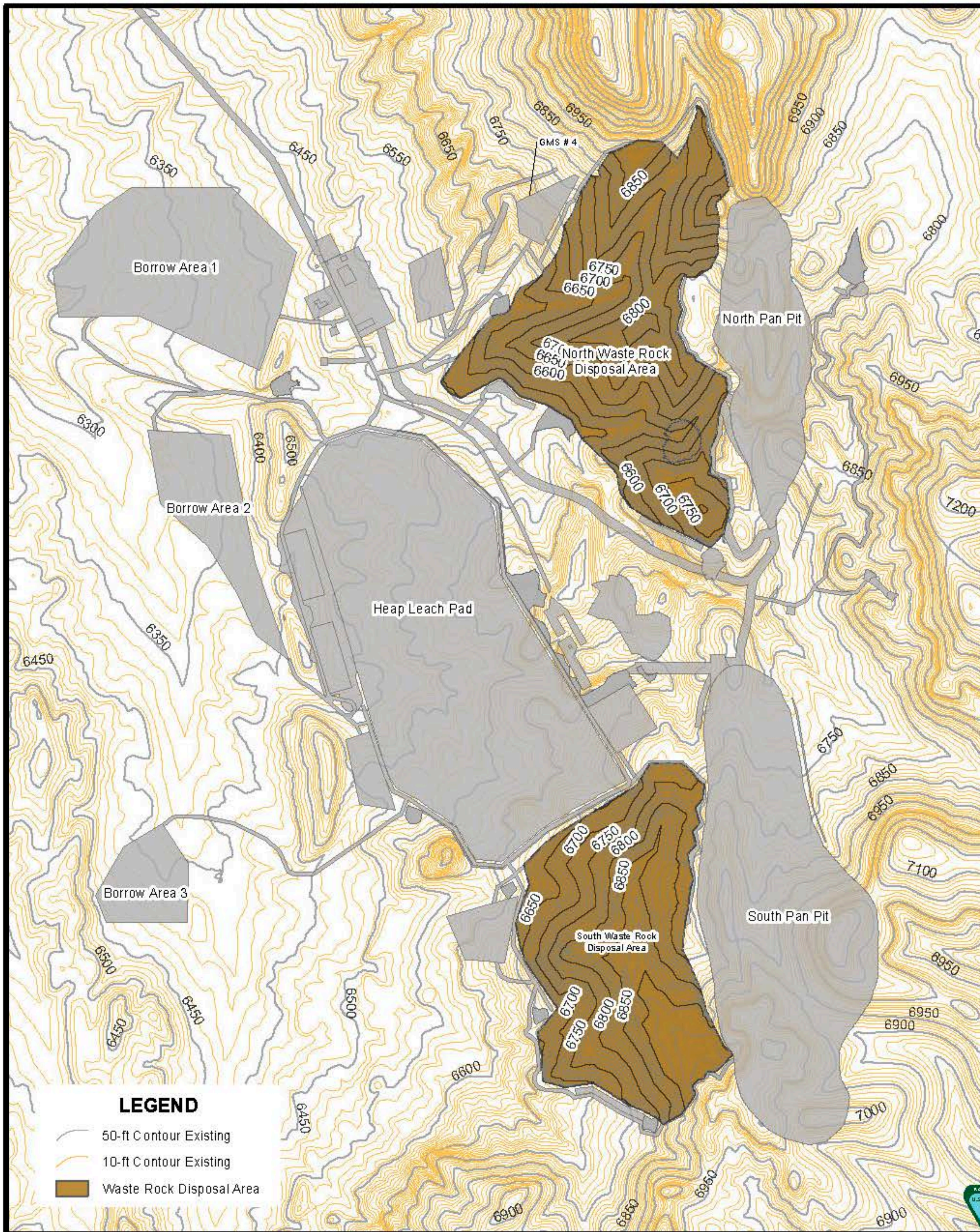

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FIGURE 2.3-4
WRDA DESIGN CONTOURS

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PAN MINE PROJECT

SCALE: 1 inch = 2,000 feet

DATE DRAWN: DEC. 24, 2012

0 1,000 2,000 4,000 Feet

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areas of steeper terrain. Benches would generally be completed by starting at the base of the slope and working upward. This method of benching from the bottom up and creating slopes that generally conform to the ultimate regraded slope would have the effect of reducing earthwork volumes required to complete final reclamation. Where feasible, the outside slopes of the final WRDA would be constructed such that variable topography would result during reclamation sloping.

The final surfaces of the WRDAs would be constructed to create dissected, non-uniform and natural appearing reclamation topography. On sloped terrain, where safe and practicable, some weathered geologic materials below the plant growth medium may be pushed downhill to construct toe berms to prevent rocks from scattering on the hillside below the toes of the WRDAs.

Waste rock would be placed by trucks, and would be expected to contain a mixture of sized material placed in lifts. Dozers would be used for final contouring of the waste rock on the WRDAs.

Water would be diverted around the WRDAs with diversion ditched to the extent possible to avoid water leaching through the WRDAs. These stormwater controls are discussed further in Section 2.3.7. Groundwater would be monitored through the monitoring wells discussed in Section 2.3.11 and would be used to confirm that seepage of water and leaching of materials is taking place through the WRDAs.

Static and kinetic geochemical tests were conducted on waste and ore rock samples to address the potential impacts of the placement of these materials on WRDAs, their exposure in pit walls, and their use as backfill or construction material. Cross sections of sample locations in both the North and South Pan pits are shown on Figures 2.3-5 and 2.3-6, respectively. Test results are provided in the Final Baseline Geochemistry Report (Interralogic, 2012d), and are summarized in Section 4.2. Procedures for waste rock management are provided in the Waste Rock Management Plan in Appendix 2A.

2.3.5 Heap Leach Facilities

The project ore processing facilities would be a typical crushed and agglomerated heap leach operation with a gold adsorption/desorption refining processing plant. Approximately six million tons of ore per year would be loaded onto the heap, up to a total capacity of approximately 79 million tons. General heap cross-sections are presented on Figure 2.3-7.

The heap leach facilities would be designed to contain leach material and solution in accordance with Nevada Administrative Code (NAC) 445A.432-445A.438. Facilities would employ the design principle of 100 percent containment (zero-discharge design) under both normal operating and specific emergency conditions. Pad and pond liquid capacities would contain all process solution and accumulated precipitation within the system. Stormwater outside the heap would be diverted around the heap and returned to natural drainages

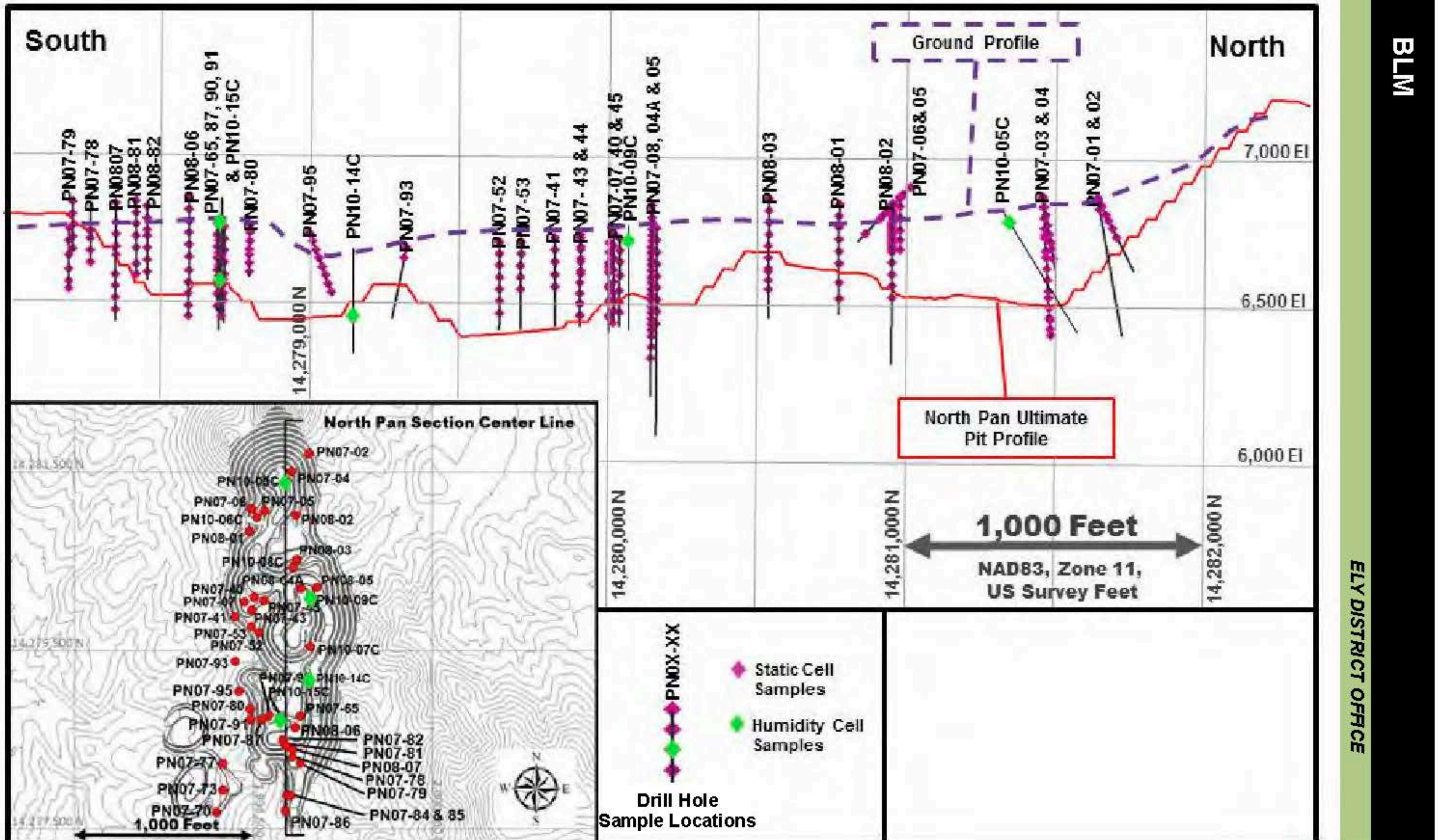

FIGURE 2.3-5
NORTH PAN PIT CROSS-SECTIONAL VIEW
OF GEOCHEMICAL SAMPLE LOCATIONS

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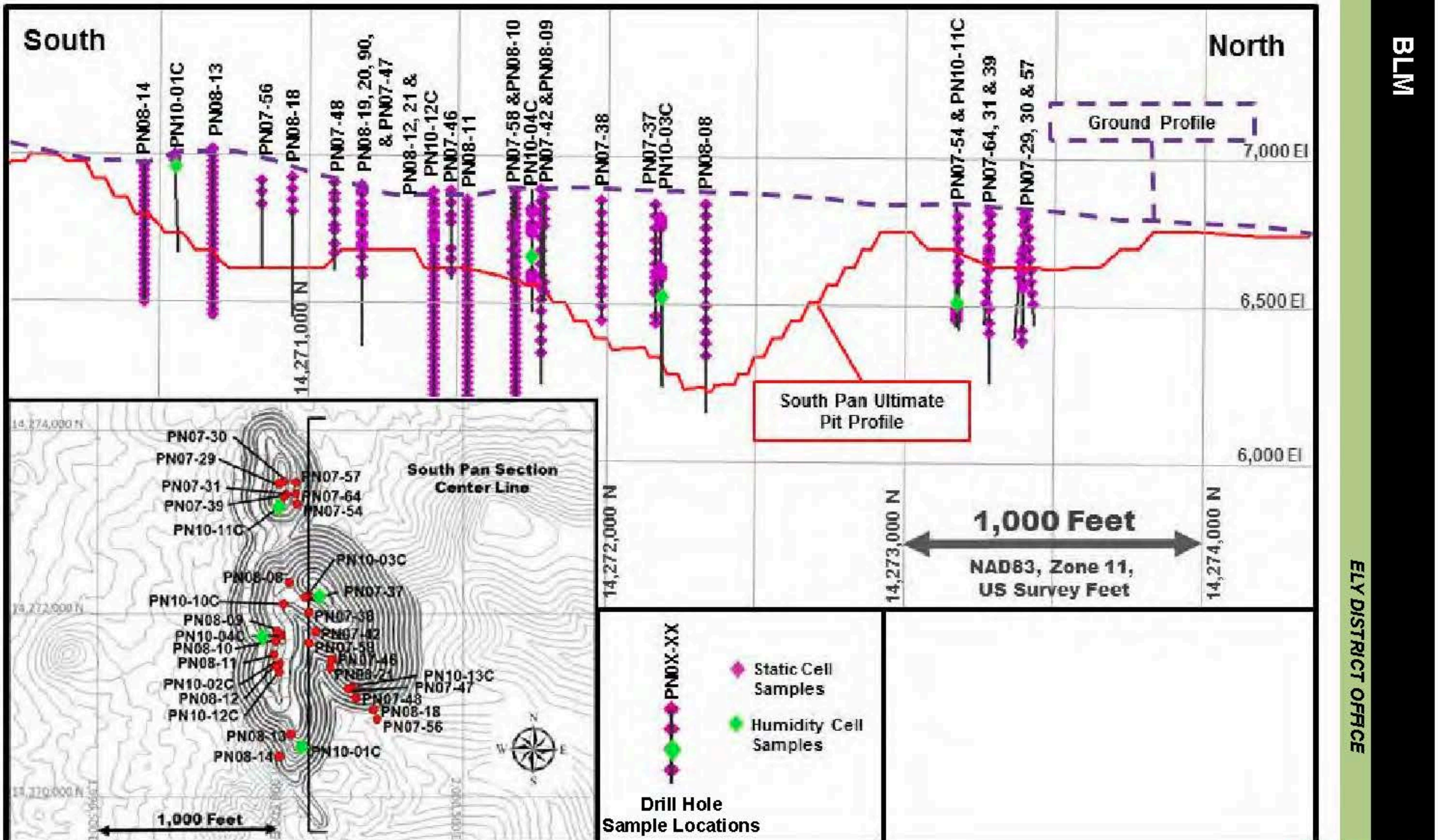

FIGURE 2.3-6
SOUTH PAN PIT CROSS-SECTIONAL VIEW OF GEOCHEMICAL SAMPLE LOCATIONS

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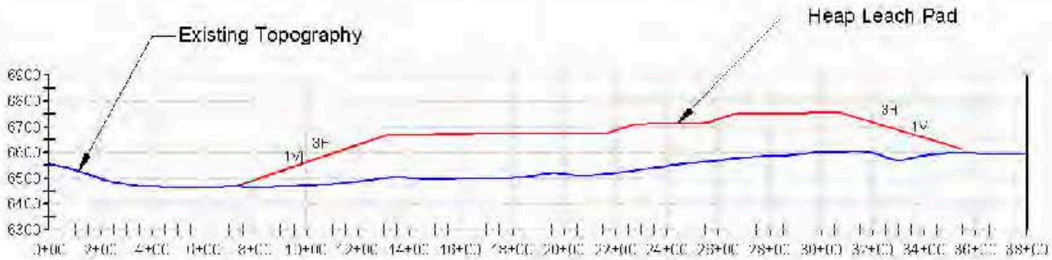
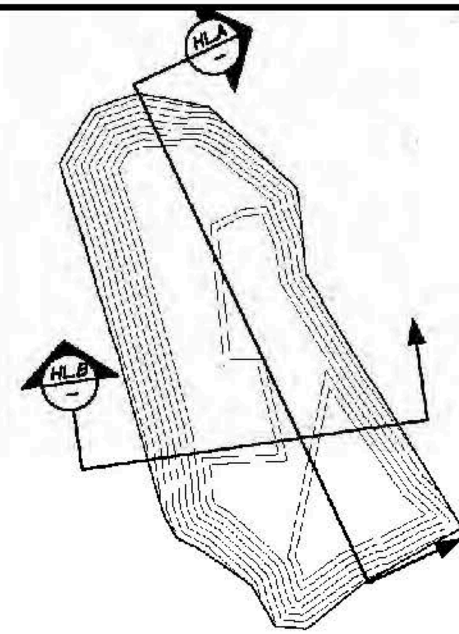
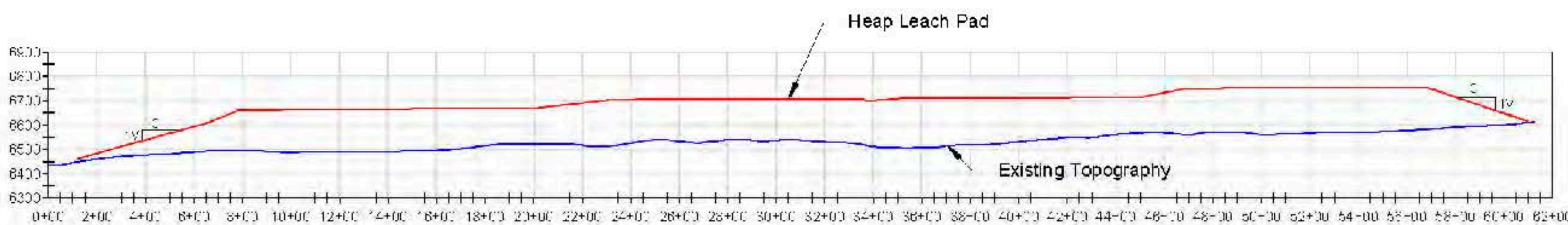


PROFILE VIEW OF HL.B
SCALE: 1" = 700'



PLAN VIEW
SCALE: 1" = 2000'



PROFILE VIEW OF HL.A
SCALE: 1" = 700'

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FIGURE 2.3-7
TYPICAL CROSS SECTION OF
THE HEAP LEACH PAD

MIDWAY GOLD US, INC.
PAN PROJECT

Drawing Source	Plan of Operations
Drawn By	SRK Consultants
Date Drawn	October 2011

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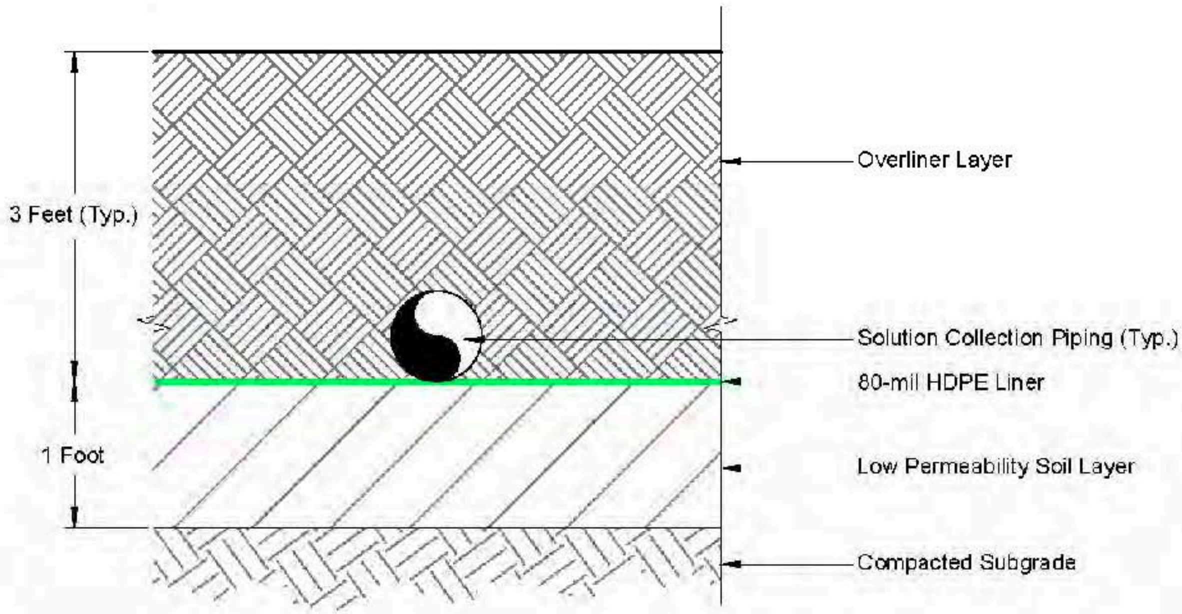
downstream. The heap leach facility would be surrounded by berms to prevent run-off from entering the process facilities. Stormwater diversions would be designed to handle the 100-year, 24-hour storm event.

Stability analyses for the heap would be performed during detailed design and included in the State of Nevada Water Pollution Control Permit application. Seismic analysis and engineering principles would determine the actual catch benches, lift height, maximum heap height, and overall foundation and heap leach facility slopes in compliance with NAC 445A.432-445A.438 and best engineering judgment. To reduce closure earthworks costs and to maintain the reclaimed heap leach facility within the perimeter berm, the heap facilities would be constructed in lifts set on a 3H:1V balance line such that the overall reclaimed slope angle would be approximately 3H:1V.

Heap leach facilities would be constructed consistent with NAC 445A.432 – 445A.438. Vegetation would be cleared from the heap leach pad and ponds footprints; coarse woody debris and plant growth medium would be salvaged and placed in separate stockpiles. Designs for the pad include an 80-mil high density polyethylene (HDPE) geomembrane primary liner overlying a compacted, low-permeability soil layer (LPSL) equivalent to a 12-inch layer with maximum permeability of 10^{-6} centimeters per second (cm/sec). The sub-base would also be compacted and protruding rocks or debris removed. A uniform, permeable overliner layer consisting of crushed rock would be placed over the primary membrane liner to protect it from puncture. The overliner would also reduce the hydraulic head at the base of the heap during normal operations to less than three feet by promoting rapid conveyance of fluids via slotted pipes from the heap to the internal and perimeter berms. Heap leach facility liners would be placed and monitored to prevent structural damage to the liner during construction. Standard quality assurance and control consistent with NAC 445A.439 would be conducted to identify, prevent, and/or repair liner punctures or welding defects along the liner seams during construction. Figure 2.3-8 shows the leach pad liner design.

Ore from both pits would be crushed by primary, secondary, and tertiary crushers to a nominal 0.5-inch to 1.5-inch size, depending on ore type, prior to leaching. Screening at secondary and tertiary crushing stations would control the crush size. The crushed ore would be agglomerated with water, cement and lime and sent by conveyor to the heap leach pad for stacking on the heap in lifts. Cement for agglomeration, and lime for pH control would be added downstream of the secondary or tertiary crusher located just east of the heap facilities. Lime and cement silos, with an estimated storage capacity of 100 and 250 tons, respectively, would be located at or near the proposed crushing facility.

The ore would be stacked on the leach pad in 20-foot high lifts that would, over time, increase the overall height of the heap to 200 feet. At any one point in time, fresh ore would be placed on a designated area of the heap while active leaching of the ore already on the leach pad is underway in other areas of the heap.



HEAP LEACH PAD BASE LINER DETAIL
SCALE: NTS

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FIGURE 2.3-8
HEAP LEACH PAD LINER DESIGN DETAIL

MIDWAY GOLD US, INC.
PAN PROJECT

Drawing Source	Plan of Operations
Drawn By	SRK Consultants
Date Drawn	October 2011

Not To Scale

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The leaching solution used on the heap would be a dilute (0.004-0.005 grams per gallon) mixture of sodium cyanide with a pH of approximately 10.5. The leaching solution applied to the top of the heap is called "barren solution" because it does not have appreciable gold content. It would be pumped to the heap from the barren solution pond through a system of piping that transports the solution to the designated area of the heap to be leached where the solution would be applied equally via solution distribution piping to the surface of the heap. Barren solution would be distributed on the leach pad with drip tube emitters. Sprays may be used at times for evaporation to control process fluid inventory volumes. The solution application rate would be approximately 0.004-0.005 gpm per square foot of heap surface. The barren solution would wet the ore, contacting the microscopic-sized gold particles in the ore and dissolving the gold into the solution. The leach solution bearing appreciable gold content is called "pregnant solution." The leach solution would percolate downward through the ore to the base of the heap at the overliner and then to slotted pipes placed above the primary liner, flowing via pipes in lined ditches to the lined pregnant solution pond.

Process solution from the pregnant solution pond would be pumped to the gold recovery plant where the solution would be run through columns filled with activated carbon which would remove the gold from the solution and collect it on the carbon granules. The process solution flowing out of the carbon columns would be barren solution and would be routed to the barren solution pond. Barren solution would be removed from this pond, mixed with additional cyanide reagent as required to maintain leaching strength cyanide concentrations, and pumped back to the heap to continue the closed-loop leaching cycle. Figure 2.3-9 shows the overall process flow sheet.

Sodium cyanide reagent would arrive at the site as solid briquettes or liquid in Nevada Department of Transportation (NDOT)-approved tote bins or tanker trucks and off-loaded from the truck in the secure reagent area. Tote bins would be transported with a forklift to the reagent mix area where trained operators would mix the cyanide briquettes with an alkaline solution of water and sodium hydroxide. The mix area would have hydrogen cyanide gas monitors in accordance with MSHA standards. Cyanide reagent would be added to the barren solution entering the barren pond, which would be pumped to the heap to continue the leaching process.

Makeup (fresh) water would be added to the barren pond as required to maintain a stable water balance in the leach system and replenish water lost to evaporation or trapped as immobile moisture in the heap.

2.3.6 Processing Ponds and Plant

Final designs for the barren and pregnant solution ponds would be developed and submitted to NDEP for approval prior to construction. The ponds would be 15 feet deep, crests would be 30 feet wide to provide access. To the east side, the crest would be adjacent to the 30-foot corridor used for access to the leach pad piping. At a minimum, process ponds are required by NAC 445A.433.1(d) to be sized and operated to fully contain process fluids as well as projected accumulations from a 25-year, 24-hour storm event. The process pond design is more

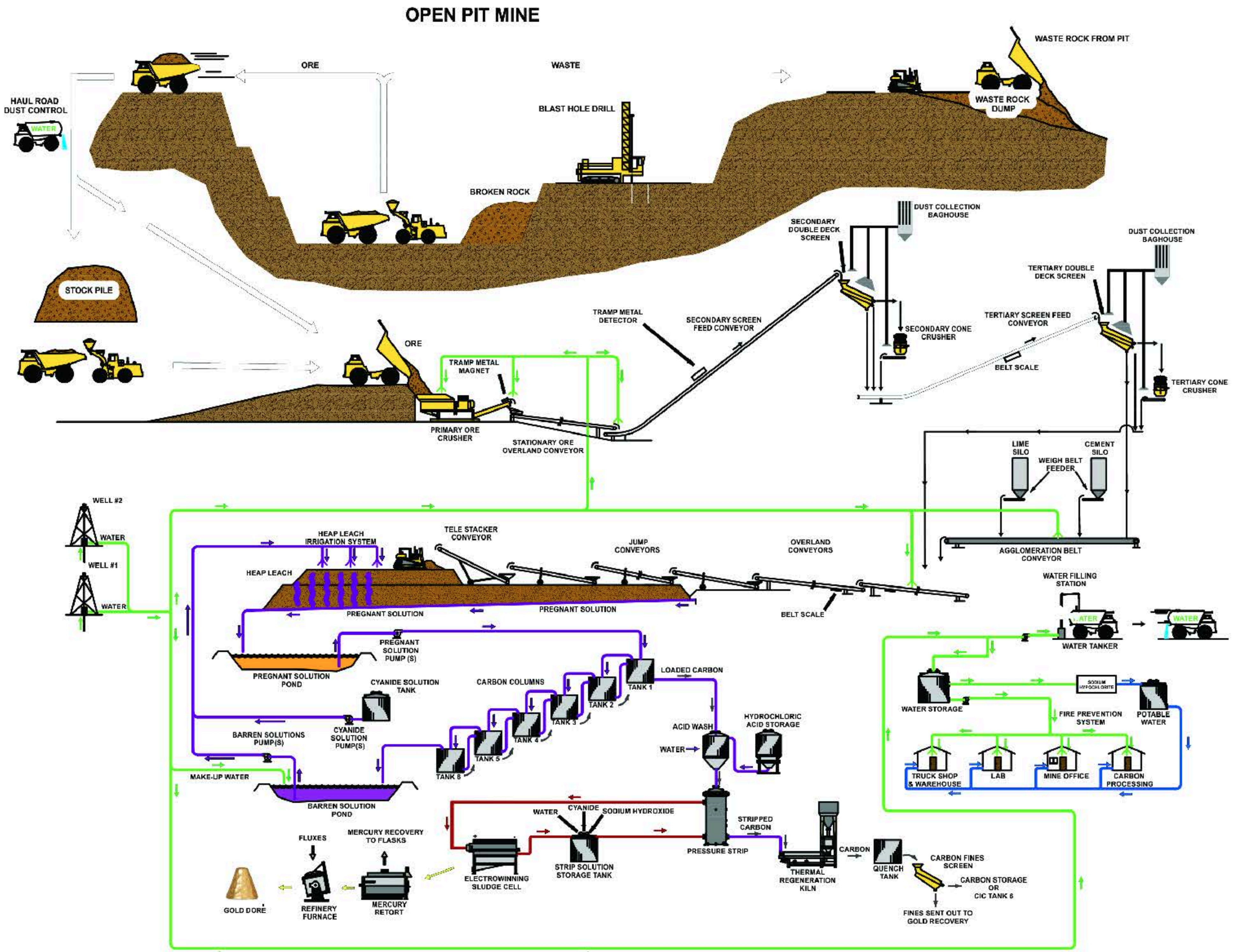

FIGURE 2.3-9
PROCESS FLOW SHEET

MIDWAY GOLD US, INC.
PAN MINE PROJECT

Drawing Source	Plan of Operations
Drawn By	SRK Consultants
Date Drawn	October 2012

Not To Scale

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conservative than the NAC requirements, as the process ponds are sized to contain the following components:

- Dead storage for pump operation (bottom four feet of the pond);
- Operating process fluid storage;
- Draindown process fluid storage;
- Storage of projected accumulations from a 100-year, 24-hour storm event; and
- Freeboard (top two feet of the pond).

In addition, a backup generator would be provided to supply power to the process pond pumps in the event of a line power outage. The pregnant process pond would be connected to the barren process pond via an internal spillway to provide, in combination, containment of runoff and direct precipitation from the 100-year, 24-hour storm event. Each process pond would also have an external spillway to protect the integrity of the pond embankments. Ponds would be constructed with a minimum crest width of 30 feet. Interior slopes would be 3H:1V, and exterior slopes would be 2H:1V or flatter. The process ponds would be fenced with eight-foot high chain-link fencing and covered by bird balls, or equivalent, to prevent avian access as required by the NDOW Industrial Artificial Pond Permit.

The liner system for the process ponds would consist of a double geomembrane liner and a leak collection and recovery system. An HDPE liner of 80-mil thickness would serve as the primary liner, and an HDPE liner of 60-mil thickness would serve as the secondary liner. The secondary liner would function as a seepage barrier in the event the primary liner is damaged or punctured. The HDPE liners have high strength and durability as well as ultra-violet resistance, so a cover to protect them from weather would not be required.

A geonet drainage layer would be placed between the HDPE primary and secondary liners in the ponds to act as a separating, highly pervious layer to intercept and transport leakage. The geonet would lead into a depressed gravel-filled, leak detection sump located at the pond low point to allow for collection of leakage. Within the sump area, the soil beneath the secondary liner would be amended and compacted to create a two-foot-thick LPSL with a maximum permeability of 10^{-7} cm/sec. From the leak detection sump, an HDPE riser pipe would be located between the primary and secondary liners and extend to the pond crest. The riser pipe would allow for leak detection monitoring and removal of solution leakage.

Pregnant solution would be treated in a conventional adsorption/desorption and refining plant and would be subject to the following unit processes:

- Carbon-in-Columns;
- Acid wash;
- Carbon elution;
- Electrowinning;
- Carbon regeneration;
- Carbon handling and sizing;

- Reagent mixing and storage; and
- Refinery.

The pregnant solution would be recovered and pumped through carbon columns to load gold onto the granular, activated carbon contained in the carbon columns. The loaded carbon would be removed from the carbon columns in batches and transferred via piping to a carbon wash vessel. Mineral scale and other impurities would be washed from the carbon with a dilute hydrochloric acid solution. The washed carbon would be transferred to a carbon stripping vessel where alkaline cyanide solution would re-dissolve (strip) the adsorbed gold from the carbon. Stripped carbon would be sent to a thermal regeneration kiln where it would be re-activated for reuse in the carbon columns. The re-activated carbon from the kiln would be transferred to a quench tank and fines screen before returning to the process circuit. Undersize carbon fines separated from the carbon granules would be collected and shipped off site for recycling and gold recovery.

The gold-rich strip solution produced in the carbon strip step would be pumped to electrowinning cells where the gold would be electroplated onto anodes producing a gold sludge material. This gold-bearing material would be collected from the electrowinning cells and heated in closed retorts to drive off any contained mercury. The barren strip solution reporting from the electrowinning cells would be recycled to the strip circuit.

The retorts consist of a sealed heating chamber where the mercury would be vaporized. The mercury vapor would be swept in the airflow from the heating chamber to a connected condenser where the mercury vapor would be cooled and liquid mercury produced. The airflow from the condenser would be routed through a carbon adsorption air pollution control device to remove any trace mercury vapor before discharging the airflow to the atmosphere. Mercury vapor controls that meet the Nevada Maximum Achievable Control Technology in accordance with NAC 445B.3611-445B.36899 would be installed on all thermal devices. The mercury produced in the retort equipment would be collected in flasks and shipped off-site to a secure facility. The retorted gold-bearing material would then be placed into a doré furnace where the gold-bearing material would be melted and separated from impurities collected in molten slag. The molten metal would be poured into gold doré bars. The doré would be shipped off-site for further refining. The slag would be crushed and reprocessed on site to remove residual gold content.

Containment within the process building would include tanks, pipes, and vessels; and sealed concrete floor slabs, floor sumps, and walls to contain any spilled process solutions or materials. Any reagents stored outside buildings will be in containment areas that are pumped or are discharged to the ponds.

Culverts and diversion ditches would be placed in and around the process facilities as necessary for further stormwater control. Stormwater collected within the leach pad area would be channeled to the process ponds. Stormwater collected in the ponds would be handled in accordance with the Water Pollution Control Permit, which would allow for utilizing collected stormwater in the process circuit.

Final design of the proposed process components would be in accordance with the Water Pollution Control Requirements. Final designs would be submitted to the BLM and the NDEP prior to construction. As-built drawings would also be submitted within 30 days after construction.

2.3.7 Stormwater Management

Stormwater would be diverted around the flanks of the North Pan, South Pan, North Syncline, and Syncline pits and returned to natural drainages. The South Syncline and Black Stallion satellite pits would not require diversion ditches as the upgradient watershed areas are negligible. Stormwater collection trenches would direct stormwater from disturbed areas to sediment basins to minimize transport of sediment. The diversions would be designed to handle flows in excess of the 25-year, 24-hour storm event. Because most runoff from the main upgradient watershed east of the North Pan Pit cannot be diverted around the North Pan Pit via gravity flow, Midway would construct the East North Pan Pit Stormwater Collection Pond, shown on Figure 2.3-1, to allow for collection of stormwater from the native watershed. If needed during operations, non-contact stormwater may be pumped to the native drainage west of the North Pan Pit.

The pond would have a maximum constructed embankment height of about 17 feet and a storage capacity of approximately 17.7 acre-feet, which is sized to maintain a net negative water balance during average climatic conditions plus two feet of freeboard. The pond spillway would be sized for the probable maximum precipitation event. Pumps and a pipeline would be sized to convey up to 1,500 gpm of non-contact stormwater from the pond to the native drainage west of the North Pan Pit; the pipeline discharge area would be designed to prevent erosion of the native drainage. As shown on Figure 2.3-1, a fill stand would also be installed on the pipeline to use non-contact stormwater from the pond as dust control water.

Additional sediment basins would be located to prevent sediment from leaving the mine area as shown on Figure 2.3-1. Sediment basins are designed to contain the 10-year, 24-hour event and approximately one year of accumulated sediments, while maintaining a minimum freeboard of one foot. Sediment basin spillways would be designed to safely pass flows from the 25-year, 24-hour storm event.

Stormwater run-off would be diverted around the WRDAs and returned to natural drainages. Culverts would be employed where roads cross natural drainages. The diversions would be designed to handle flows from the 25-year, 24-hour storm event as shown on Figure 2.3-10. Sediment basins would be located in drainages downgradient of the WRDAs. Sediment basins would be sized for the annual estimated sediment yield from the WRDAs. Further details on stormwater management are provided in the Stormwater Management Plan in Appendix 2B.

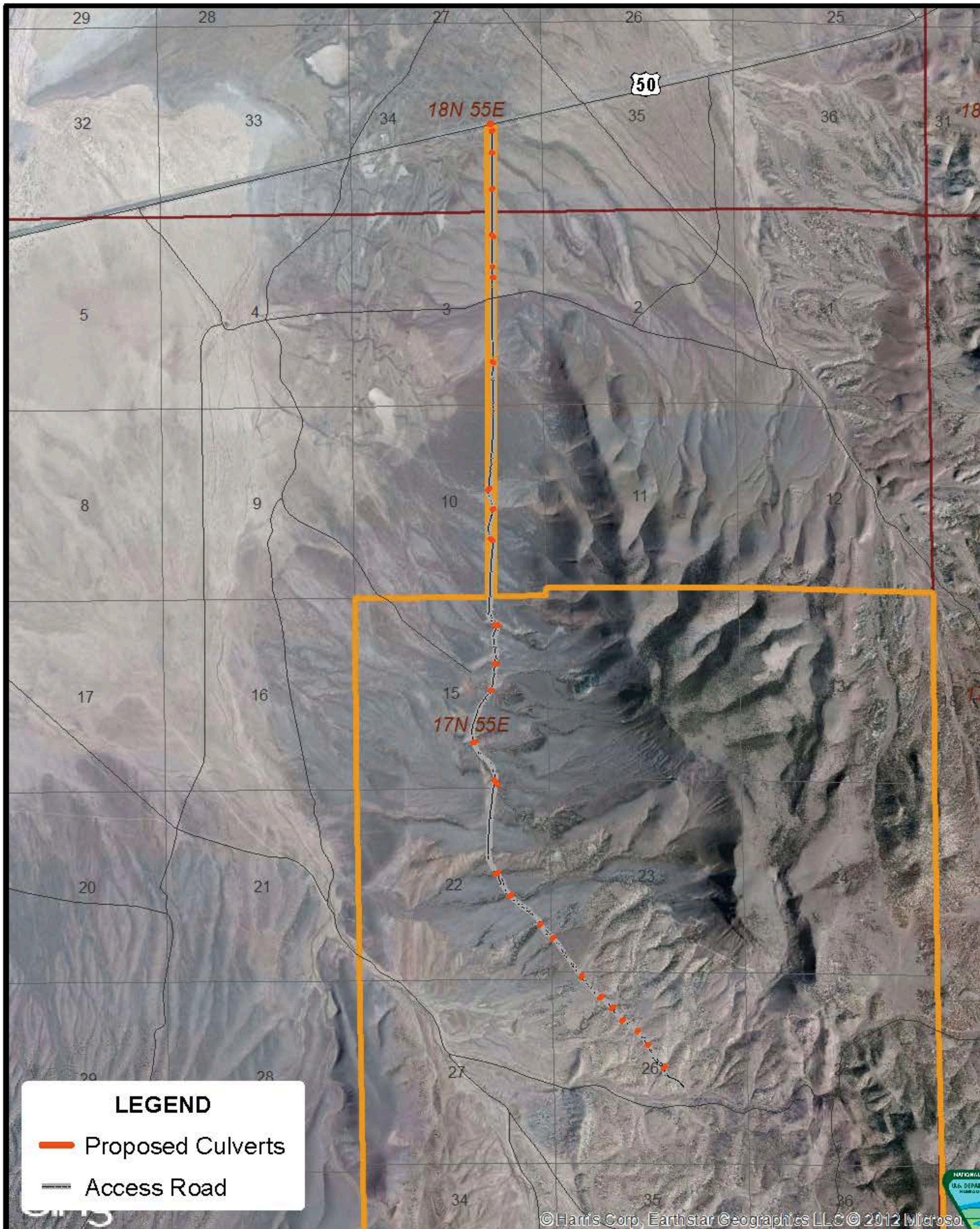

FIGURE 2.3-10
PROPOSED CULVERT
ACCESS ROAD LOCATIONS

MIDWAY GOLD US, INC.
PAN MINE PROJECT

SCALE: 1 inch = 4,000 feet

DATE DRAWN: JAN. 4 2013

0 2,000 4,000
Feet

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2.3.8 Public Safety

The project would operate in conformance with all MSHA safety regulations (30 CFR Parts 1-199). Site access would be restricted to employees and authorized visitors. Midway would restrict public access to existing roads that cross active mining areas in the Proposed Action boundary, as per MSHA requirements. Public access would be controlled through the security gatehouse, with a fence surrounding the mine area, and locked gates or other physical methods.

2.3.9 Employment

The maximum number of people employed during construction would be approximately 160. During the operations phase, this number would decrease to approximately 150.

2.3.10 Transportation

Employees would most likely commute to the mine from Ely or Eureka via U.S. Highway 50. Parking for private vehicles would be provided near the administration building.

Bulk chemicals and supplies would typically be transported to the site on trucks via U.S. Highway 50 from either from the east (Ely) or west (Eureka) and the major connecting highways including Interstate 80 via Highways 93 and 278; and Interstate 15 via Highways 6/50, 93, and 6. Table 2.3-5 describes the number of expected shipments for reagents to the site. There are no current restrictions on delivery times, and no restrictions are proposed.

2.3.11 Ancillary Facilities

Ancillary facilities at the project are shown on Figure 2.3-1 and would include:

- Reagent, fuel, and explosives storage;
- Buildings including administration, laboratory, safety/security, truck shop, warehouse, helicopter pad, and associated parking;
- Potable water and septic systems;
- Fire water supply;
- Waste management including a Class III landfill;
- Ready line (temporary equipment staging area);
- Light vehicle wash;
- Communication facilities;
- Area to store petroleum contaminated soils;
- Monitoring wells;
- Borrow areas;
- Plant growth medium and woody debris stockpiles;
- Fencing; and
- Yards and inter-facility disturbance.

Reagent, Fuel, and Explosives Storage

Most reagent tanks would be located adjacent to or within the process facilities in secondary containment. The secondary containment would hold 110 percent of the largest volume tank or tanks in series and, if out of doors, additional capacity to hold the 100-year, 24-hour storm event. The floor of the reagent areas would be sealed to prevent spills from entering cracks or permeating the concrete and being released to the environment. Table 2.3-5 presents the reagents that would be used, the volumes that would be stored on-site, and the number of shipments anticipated per month. These estimates may vary depending on the metallurgical conditions encountered during operations. Midway may elect to substitute reagents with similar chemical compositions for those listed if higher efficiencies can be realized.

Table 2.3-5 Fuels, Reagents, Volumes, and Shipments

Reagent	Storage Capacity	Amount/ Delivery	Anticipated Trucks Per Month	Approximate Consumption Per Day
Ammonium Nitrate	50-ton silo	30 tons	10.0	10 tons
Ammonium Nitrate Emulsion	45-ton silo	30 tons	12.0	12 tons
Antifreeze	1,000-gal tank	500 gal	0.2	5 gal
Antiscalent	500 gal	250 gal	0.5	63 lbs
Automatic Transmission Fluid	1,000-gal tank	500 gal	0.9	15 gal
Borax	2.5 tons	1.5 tons	0.6	14 lbs
Carbon	5 tons	2 tons	2.6	175 lbs
Cat FD01 Lube	100 gal	50 gal	0.04	2 gal
Cement	250-ton silo	30 tons	43.0	43 tons
Drill Oil (ISO VG 100-150)	2,000 gal	500 gal	0.4	197 gal
Engine Oil	1,500-gal tank	1,000 gal	0.7	29 gal
Fluorspar	0.5 ton	0.5 ton	0.6	3lbs
Gasoline	5,000-gal tank	4,500 gal	0.8	125 gal
Gear Oil (50W)	2,000-gal tank	1,000 gal	0.7	24 gal
Gear Oil (90W)	100 gal	50 gal	0.25	12 gal
Gear Oil (80W90)	100 gal	50 gal	0.2	6 gal
High Pressure Oil (HP-350)	100 gal	50 gal	0.2	25 gal
Highway Diesel Fuel	2,000-gal tank	1,800 gal	0.4	25 gal
Hydraulic Fluid	1,000-gal tank	500 gal	0.5	8 gal
Hydrochloric Acid	10,000 gal	6,000 gal	1.3	265 gal
Hypochlorite	1,000 gal	500 gal	2.4	40 gal
Lead (Litharge)	800 lbs	800 lbs	0.4	1lbs
Lime	100-ton silo	30 tons	17	17 tons
Methanol	500 gal	250 gal	0.5	5 gal
Nitre (Potassium Nitrate)	1 ton	0.5 ton	0.4	4lbs
Off-Road Diesel Fuel	2 x 30,000-gal tanks	6,000 gal	29.0	5,800 gal
Propane	80,000 gal	5,000 gal	10.2	1,535 gal (cold weather)
SAE 60 Oil	2,000 gal	1,000 gal	0.5	533 gal
SAE 40 Oil	100 gal	50 gal	0.25	12 gal

Reagent	Storage Capacity	Amount/ Delivery	Anticipated Trucks Per Month	Approximate Consumption Per Day
Silica Sand	1 ton	1,200 lbs	0.6	5lbs
Sodium Carbonate	1 ton	1 ton	0.5	34 lbs
Sodium Cyanide	13,500 gal	5,000 gal	5.0	740 gal
Sodium Hydroxide	10,000 gal	5,000 gal	0.8	127 lbs
Used Oil[1]	3,000-gal tank	2,500 gal	0.9	76 gal
Used Antifreeze[1]	500-gal tank	500 gal	0.4	5 gal

[1] Indicates materials generated on-site.

Drivers off-loading fuel would be certified and trained. Appropriate equipment would be located within the fuel containment area to facilitate collection of spilled fuels. A sump would be located at one end of the containment so that spilled fuels could be pumped from the containment using a portable pump.

Other smaller quantities of hydrocarbons and regulated materials would be located at the truck shop, warehouse, and process area. These would be kept in-doors in proper storage and secondary containment systems.

The transportation, storage, and use of fuels and reagents would adhere to applicable regulations and guidelines established and enforced by NDEP, United States Department of Transportation (USDOT), NDOT, BATFE, Department of Homeland Security, and MSHA.

Explosive agents would be purchased, transported, stored, and used in accordance with the BATFE; Department of Homeland Security provisions; MSHA regulations and other applicable federal, state, or local legal requirements. The primary explosive used would be ANFO. Ammonium nitrate prill would be stored in a silo in a secure area. Explosive agents, boosters, and blasting caps would be stored within a secured magazine.

Buildings

The truck shop would include maintenance bays to support mobile equipment maintenance. Lubricants and antifreeze would be managed and stored as required by MSHA and other state and federal regulations. Oil totes of different size for certain types of oils would be used throughout the shop area. Individual tote capacity would be less than 500 gallons and would have built-in secondary containment or would be stored within secondary containment for larger tanks. Small quantities of solvents, paints, and other materials would be stored at the truck shop and managed according to state and federal regulations.

An enclosed truck wash facility would be located adjacent to the truck shop. Hoses would be used to clean mobile equipment. Wash water would be directed to a settling basin where water and solids would be separated. Water would be treated with an oil-water separator and re-circulated. Solids collected from the settling basin would be tested and handled as petroleum-contaminated soil if necessary. The hazardous waste storage area would be located next to the truck shop as described under the waste management section.

A warehouse would be located near the truck shop and would be used for the storage of supplies and small equipment. In addition, an adjacent building would have offices, a lunch room, locker rooms with showers, and crew meeting rooms.

The laboratory would be located near the administrative building and the core shed. The laboratory would include separate areas for sample preparation, wet analysis, a metallurgical laboratory, a balance room, and offices. The laboratory would operate seven days per week and would be capable of processing mine and process samples.

Reagents used in the analytical and metallurgical test procedures would be stored at the laboratory and generally include small quantities of nitric acid, sulfuric acid, hydrochloric acid, hydrofluoric acid, and sodium hydroxide. Fire assay reagents would generally include litharge, borax, carbon, silica, and sodium carbonate. Small quantities of other reagents may be used periodically. Laboratory sinks would be designated either as an “acid” sink or a “base” sink. These sinks would drain to tanks within containment. The tank contents would be neutralized on a regular basis. The neutralized waste would be disposed in accordance with applicable regulatory requirements.

The administrative building would be located near the access road as shown on Figure 2.3-1. These offices would house the reception area, offices for administrative staff, and meeting rooms.

The safety/security building would be located along the access road as shown on Figure 2.3-1. A gatehouse manned by security guards would be located next to the safety/security building and the parking area for personal vehicles would be located outside of the mine fence. The safety/security building would include a first-aid clinic and a meeting/training room.

Emergency response vehicles would be stationed at the safety/security building to respond to accidents and incidents. These vehicles would be staffed by mine employees certified to provide emergency fire and medical services for mining operations in the state of Nevada. A helicopter pad for emergency use would be located next to the access road between the guard shack and the administrative building (Figure 2.3-1).

The insides of buildings, and the currently active parts of the pit areas, the WRDAs, and the heap and process area would use artificial lighting at night as necessary to comply with MSHA illumination requirements and to allow Midway to conduct operations safely and efficiently.

Potable Water and Septic Systems

Water from supply wells would be pumped to the fresh water storage tank and nearby potable water tank, as shown on Figure 2.3-1. Potable water would be treated in accordance with NDEP Bureau of Safe Drinking Water regulations. This water could also be used as firewater. The potable water delivery system would be designed, constructed, and operated as required by a certified operator. Water would gravity feed to the administrative building, warehouse, truck shop, laboratory, and process buildings for use.

Septic systems and leach fields would be installed near the administrative building, process plant, truck shop and warehouse. Biosolids would be pumped as necessary by a licensed septic waste hauler and transported to a licensed repository.

Fire Water Supply

Fire protection equipment and a fire protection plan would be established for the proposed project area in accordance with State Fire Marshal standards.

A fire suppression water system would be installed to provide service to the buildings. Fire protection water would feed from the fresh water storage tank located northwest of the North WRDA as shown on Figure 2.3-1. Fire hydrants would be placed at regular intervals around the buildings. The buildings would have sprinkler systems and hand-held fire extinguishers available in accordance with MSHA regulations and industry standards. Employees would be trained in the use of hand-held fire extinguishers and alarm systems.

Light vehicles would be fitted with spark arrestors and would carry a small water supply or a fire extinguisher in order to control sparks that may be generated by exhaust.

Emergency response vehicles and a trained mine rescue team would respond to fire and medical emergencies at the site. Mine rescue and fire response teams may be available to assist with off-site response if requested by agency personnel or others. However, Midway understands that local and regional agencies would maintain responsibility for response to incidents outside of the project area. A separate radio frequency would be established for emergency use, and emergency response and communication protocols would be established.

Waste Management

Midway would obtain a Hazardous Waste Identification Number from the Environmental Protection Agency (EPA). Hazardous waste management is subject to specific requirements that are dependent upon the amount of hazardous waste produced at a facility in a calendar month. The mine is expected to be in the “small quantity generator” category as defined by the EPA (maximum 220 pounds or 100 kilograms per month). Used lubricants and solvents would be characterized according to the Resource Conservation and Recovery Act (RCRA) requirements and would be stored appropriately. Used solvents and fire assay crucibles are the only identified potential hazardous wastes at this time. Midway would institute a waste management plan that would identify the wastes generated at the site and their appropriate means of disposal. Employees who deal with these wastes would be trained in their proper handling, storage, and emergency procedures relevant to their responsibilities; the firm selected to transport and dispose of these materials would be certified by NDOT and NDEP, as required. It is anticipated that transport would occur on a monthly basis.

Small quantities of hazardous waste would be stored according to state, federal, and local regulations on a covered and sealed concrete pad with secondary containment berms near the truck shop until removal and disposal at an authorized facility. Used oil and coolant would also be stored at the truck shop in secondary containment. The materials would be either recycled or disposed in accordance with state, federal, and local regulations. Used coolant and oil would not be mixed. Used containers would be disposed or recycled according to federal, state, and local regulations.

Industrial, non-hazardous solid waste would be generated during construction and operations. Solid waste generated by the mine and process departments would be collected in dumpsters near the point of generation. Industrial solid waste would be disposed in an on-site Class III industrial landfill that complies with NAC 444.731 through 444.747. The landfill would be constructed as a trench within an active lift of the North WRDA. The landfill would be covered weekly in accordance with the solid waste management plan, and its location surveyed and documented. As the landfill nears capacity, another landfill would be located and permitted in accordance with NDEP Bureau of Waste Management requirements. The filled landfill would be closed and monitored in compliance with NDEP Bureau of Waste Management requirements.

A training program would be implemented to inform employees of their responsibilities in proper waste disposal procedures. Waste disposal practices would include:

- Proper storage, disposal and transport requirements for hazardous materials, liquid wastes, and petroleum products;
- Used antifreeze would be collected and stored in a "Used Antifreeze" tank located at the truck shop. Used antifreeze would be sent to a licensed recycling facility via a licensed trucking company;
- Used oil would be collected and stored in a "Used Oil" tank located at the truck shop. Used oil would be tested to determine its status prior to shipping to a recycling facility or other appropriate destination;
- Used aerosol cans would be emptied in satellite accumulation can-puncturing devices located in the truck shop and process building, core shed, and other areas where aerosol cans are used extensively. The can puncturing devices would be equipped with closed-top drums to collect the contents of the punctured can. The contents collected in the drum would be shipped off-site for disposal in accordance with the RCRA. Empty, punctured cans would be disposed in the landfill or recycled as light scrap steel;
- Used haul truck tires would be placed in specific locations within the WRDAs and buried. Only one layer of tires would be placed in each bench. The locations would be surveyed. Alternatively, haul truck tires may be recycled if a suitable recycling facility is available;
- Used fluorescent light bulbs would be collected and sent off-site to a recycling facility;
- Used oil filters would be drained prior to being crushed and recycled;

- Shop wipes would be collected in metal receptacles near the point of use and then disposed in accordance with state and federal regulations;

- Used containers that held reagents or petroleum products would be drained, rinsed, and recycled; and

- Used oil would be collected at the used oil tank at the truck shop and transported off-site using a licensed used oil transporter.

Ready Line

Haul trucks and other mobile mine equipment would be temporarily staged when not in use at the ready line located near the mine maintenance building as shown on Figure 2.3-1. The equipment would be parked here during shift changes and when required for maintenance. The area would be lit for safety and security.

Light Vehicle Wash

A light vehicle wash would be combined with the truck wash for washing light vehicles entering or leaving the site. The light vehicle wash would be fitted with water wash systems to accommodate for weed management protocol. Oil would be collected from wash water and included with the used oil transported off-site by a licensed oil transporter.

Communications Facilities

Communication facilities would include a microwave tower and on-site repeaters as needed. These systems would be powered by either propane, line power, solar, or wind. These facilities would support an on-site radio system, communications with outside systems, internet, and cell phones for the safety of employees, contractors, and regulators.

Petroleum-Contaminated Soil Storage Area

Petroleum-contaminated soils resulting from spills or leaks of hydrocarbons would be removed from the spill site and placed in a dedicated dumpster located on a sealed concrete pad prior to handling in accordance with NDEP guidelines. The petroleum-contaminated soils management plan is attached as Appendix 2C. Materials would be tested to determine their RCRA status. The petroleum-contaminated soils storage area would be located south of the process plant.

Monitoring Wells

A groundwater monitoring program for baseline water monitoring would be established in order to monitor changes in water levels and groundwater quality associated with mining activities, should this occur. The Groundwater Monitoring Plan is attached as Appendix 2D.

One deep aquifer monitoring well, one deep aquifer test well, one production well, and four alluvial monitoring wells, have been established. The deep monitoring well (DMW-1) is located at the south end of the project area (upgradient) and the water supply test well and production well are located at the northern end of the project area (downgradient). The four alluvial monitoring wells (MW-1, 2, 3, and 4) are located along an unnamed drainage west of the mine site: MW-1 through MW-4 are located downgradient of drainages that flow west from the mine site. MW-4 will also serve as an upgradient well located south of the surface drainage flowing west and north from the mine site. Locations of the wells are shown on Figure 2.3-11. Monitoring of the wells began in September 2012 and were sampled monthly for approximately one year then quarterly thereafter. Facility groundwater monitoring during operations would be carried out in accordance with the Water Pollution Control Permit Requirements.

Borrow Areas

Borrow sources would be required for construction materials including heap leach pad underliner, prepared subgrade materials, drainage materials, pipe bedding materials, road surfacing materials, closure materials, and riprap. Construction-related borrow areas would be located as shown on Figure 2.3-1. Depth of potential borrows are expected to be between five and 15 feet. Borrow areas may be used throughout the mine life. Borrow areas would generally be designed as free draining where possible.

Plant Growth Medium and Woody Debris Stockpiles

Plant growth medium would be salvaged and either directly placed on areas being actively reclaimed (live handling), or would be placed in stockpiles. Five plant growth medium stockpiles would be located as shown on Figure 2.3-1. These piles would be in place for varying lengths of time, and would be seeded with an interim seed mixture and protected from run-on and run-off until final placement. Additional details pertaining to the stockpiles management are presented in Section 2.3.14.

Woody debris accumulated through stripping would be windrowed or stockpiled. The resulting woody debris windrows or stockpiles (collectively referred to as stockpiles) would contain trees, stumps, bushes, and other large natural vegetative remains that would accumulate during stripping operations. Woody debris stockpile locations are shown on Figure 2.3-1. Management of woody debris stockpiles is discussed in Section 2.3.14.

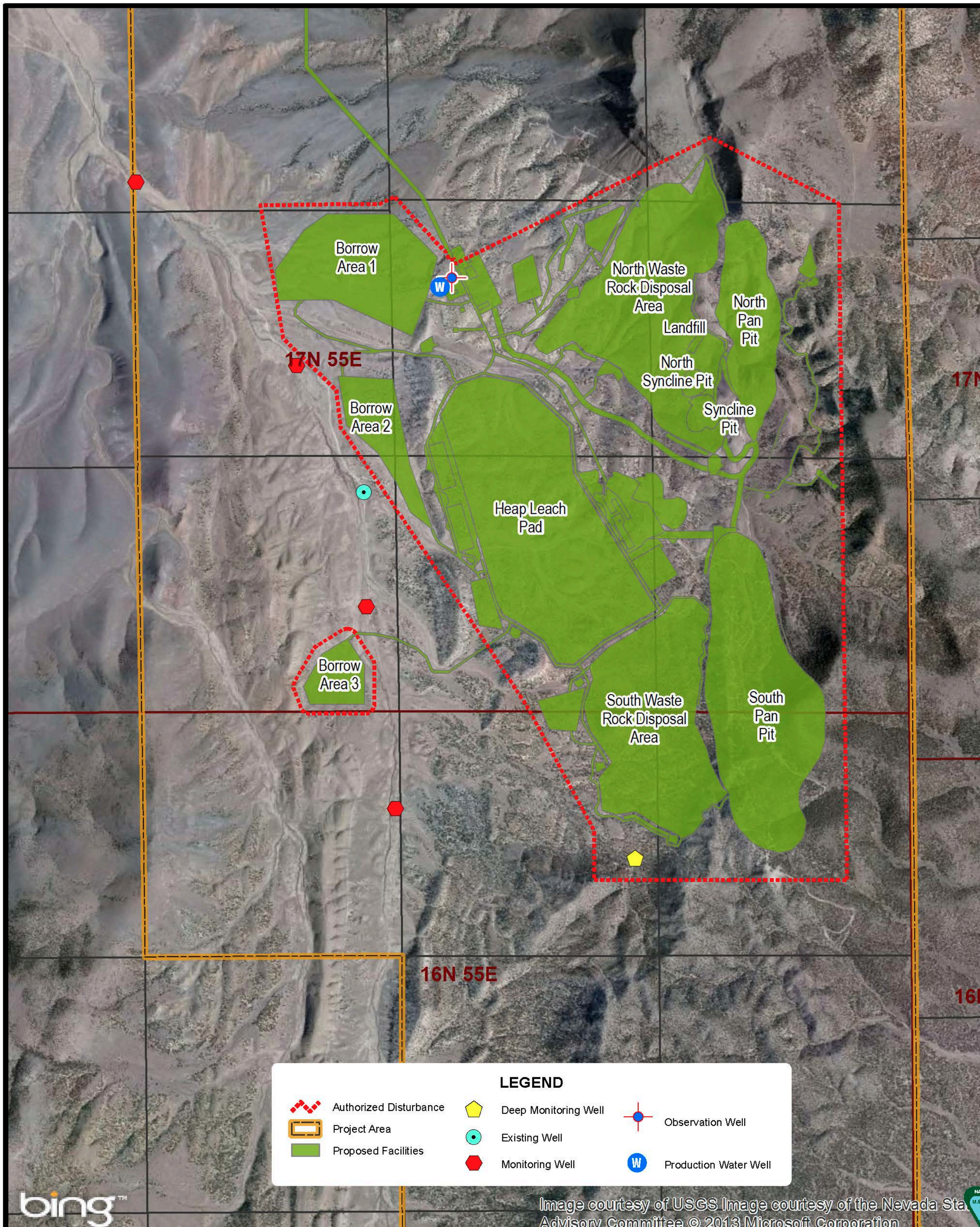
Fencing

Midway would construct BLM- and NDOW-approved barbed wire range fencing to prevent livestock and wild horses from entering the mine area. In areas where a higher level of security is needed, eight-foot high chain-link fences would be erected. Gates and/or cattle guards would be installed along roadways within the proposed project area as necessary. The location of the fence surrounding the mine area is shown on Figure 2.3-1.

Yards and Inter-Facility Disturbance

Yards are defined as relatively flat areas that may be used for equipment storage, access, supplies, and buffer areas between facilities. Inter-facility areas of undisturbed “islands” of vegetation may remain between the facilities. These areas are not anticipated to be disturbed. However, to allow for unanticipated drilling, road construction or buffer areas around facilities, and for permitting purposes, land within the mine fenced area as shown on Figure 2.3-1 not otherwise designated as a facility has been permitted as if disturbed by a “yard” in case any disturbance occurs in these areas.

BLM



ELY DISTRICT OFFICE

FIGURE 2.3-11 GROUNDWATER MONITORING WELL LOCATIONS

MIDWAY GOLD US, INC.
PAN MINE PROJECT

SCALE: 1 inch = 3,000 feet

DATE DRAWN: JAN. 4, 2013

0 1,500 3,000 6,000 Feet

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2.3.12 Emergency Planning and Response

A Spill Contingency/Emergency Response Plan has been prepared. The purpose of an Emergency Response Plan is to establish responsibilities and guidelines for actions to be taken by mine personnel in the event of an emergency at the mine. The plan identifies potential sources of spills, establishes measures of prevention, and defines control, cleanup, and reporting procedures in the event of a hazardous material spill, petroleum release, or natural disaster. The plan contains procedures for response to on- and off-site incidents.

A Fluid Management and Monitoring Plan (FMMP), required by NDEP for each Water Pollution Control Permit, would be developed and updated periodically to incorporate improvements identified during implementation. The FMMP provides designs and operational descriptions of the fluid management systems in place for process facilities that provide containment of process fluids during normal and unusual natural or operational events. These plans would be provided to NDEP as part of the permit application and would be updated as part of the NDEP permitting process for any new process components associated with the Proposed Action.

The preliminary Spill Contingency/Emergency Response Plan would be submitted to the applicable agencies for approval prior to commencement of process operations. With an approved plan, reporting requirements for qualifying releases consist of notification by telephone no later than 5 p.m. of the next regular work day from the time of the incident to:

- NDEP's 24-hour emergency notification number at 888-331-6337;
- Nevada Division of Emergency Management at 775-687-4240 during normal working hours or at 775-687-5300 after hours;
- Local Emergency Planning; and
- National Response Center at 800-424-8802.

Public Safety

Public safety measures used at the facility include fencing around potentially hazardous areas such as the heap leach pads, process ponds, and process buildings, and construction of berms along haul roads to prevent access to these roads. Other general safety measures used at the mine site include the following:

- Speed limits would be posted and enforced on access routes and on roads throughout the project site;
- Warning signs would be posted in areas where flammable materials and hazardous materials are stored and in areas where conditions warrant posting of signs;
- Training would be conducted for all employees as required by MSHA; and
- All other MSHA training and safety requirements would be followed and enforced by Midway.

Measures to be Taken During Extended Periods of Non-Operation

Midway does not anticipate planned temporary closures of the mine and/or the heap leach and processing facilities. In the event that continuous, full-scale production is interrupted due to economic considerations or unforeseen circumstances, the following measures would be implemented to maintain site safety and stability:

- *Security*: on-site security would be maintained by on-site personnel or remote monitoring. Sufficient staff would remain to operate the fluid management systems;
- *Supplies*: supplies such as explosives, reagents, fuels, and lubricants would be removed from the site;
- *Contractor Equipment*: contractor equipment may be removed;
- *Fluid Management*: process ponds and other fluid management systems would be inspected and operated to prevent overtopping in accordance with permit requirements;
- *Power Lines*: the power lines would be inspected regularly and maintained as necessary;
- *Roads*: the main access road would receive maintenance, as necessary;
- *Mine Open Pit*: berms or fences would be placed to help restrict access to bench face areas;
- *Erosion Control Measures*: erosion control measures and BMPs would be regularly inspected and maintained; and
- *Buildings*: building, equipment, and support facilities would be protected from public access and maintained as necessary.

Per NAC 519A.320(2), Midway would notify NDEP and BLM in writing within 90 days after any project suspension (except any temporary suspension resulting from weather conditions) that is anticipated to last longer than 120 days. Midway would identify the nature and reason for the suspension, the duration of the suspension, and the events expected to result in either resumption of mining or the abandonment of the project.

No actions would be taken that would preclude or inhibit resumption of operations. Midway personnel would staff the site as necessary and perform monitoring, security, maintain the fluid management system and necessary maintenance during extended periods of non-operations.

2.3.13 Reclamation Plan

Reclamation activities described in this section would be implemented for the facilities or disturbance associated with the Proposed Action. Reclamation of the disturbed areas resulting from activities associated with the Proposed Action would be completed in accordance with BLM and NDEP regulations. BLM Surface Management Regulations, 43 CFR 3809, establish procedures and standards for prevention of unnecessary or undue degradation of public lands by operations authorized by the mining laws, and provide for the maximum possible coordination with appropriate state agencies to avoid duplication. The State of Nevada requires that a reclamation plan be developed for any new mining projects or expansion of existing operations (NRS 519A). The POO and reclamation plan (Midway, 2012) addresses the activities associated with the Proposed Action.

The goals of the reclamation plan are to:

- Minimize surface disturbance and environmental impact to the extent practicable;
- Create diverse, reclaimed landscapes to promote vegetation and habitat diversity and hydrologic stability over time;
- Return project-related disturbances to productive post-mining land uses that emphasize livestock grazing, wild horse use, and wildlife use with dispersed recreation and mineral exploration usage;
- Comply with applicable state and federal environmental rules and regulations;
- Limit visual impacts; and
- Limit and/or eliminate long-term maintenance following reclamation to the extent practical.

These goals would be achieved by meeting the primary objectives listed below:

- Establish stable surface topographic and hydrologic conditions during mining and after reclamation that are compatible with the surrounding landscape by designing stable fill and cut slopes, controlling erosion, and managing surface water and earthen materials to minimize water quality impacts;
- Establish a stable, diverse and self-sustaining plant community through removing (either direct replacement or stockpiling) and redistributing suitable plant growth medium on disturbed areas and by the seeding and planting of native and adapted plant species;
- Reclaim facilities that are no longer needed for operations as soon as practicable during the production period (‘concurrent reclamation’);
- Integrate mining plans with soil, water and waste management and reclamation plans;
- Separate process water and contact water from non-contact (i.e. un-impacted) water; and
- Incorporate operational stormwater management facilities into the design of closure stormwater management systems.

Midway has proposed a reclamation plan to reclaim the land to productive post-mining land uses. Such measures include:

- Live-handling of plant growth medium (removal and direct placement of plant growth medium on surfaces that have been prepared for reclamation without stockpiling);
- Construction of WRDAs using geomorphic design principles;
- Salvage and redistribution of woody debris for final reclamation;
- Contouring the top of the spent heap to create more natural forms and lines; and
- A revegetation plan that includes sowing seed and planting shrub seedlings according to landscape position and aspect.

The reported acreage of surface disturbance and reclamation is based on the two-dimensional footprint of each planned facility. Soil redistribution, seeding quantities, and mass balance calculations for the major project facilities (i.e. WRDAs and heap) are based on estimates of the three-dimensional surface areas. Overlap of surface disturbance is associated with some planned facilities and is according to the disposition of the land at the time of reclamation.

Schedule

The closure and reclamation of supporting facilities and post-closure monitoring, with the exception of the evapotranspiration (ET) cell and associated downgradient monitoring wells, would require approximately ten years. The ET cell and associated downgradient monitoring wells would continue to be monitored for 30 years after construction of the ET cell, bringing the entire project life to 48 years.

Concurrent reclamation during construction and active mining, would begin as soon as practicable on areas where no further disturbance would occur minimizing the need for post-mining reclamation. Concurrent reclamation would involve contouring and revegetating the permanently inactive areas during construction and operations. Interim reclamation would be implemented on lands disturbed during the course of construction, mining or waste rock placement which, although not at final reclamation contours or desired hydrologic isolation, would not be re-disturbed for a significant period and, therefore, require interim stabilization. Soil would not be applied to these areas, the surface of the area would be roughened and the final recontouring and seedling mixture, provided on Table 2.3-7, would be completed pursuant to the Reclamation Plan and Final Permanent Closure Plan as approved by NDEP and BLM. Fertilizer and surface mulch or erosion control fabric would only be applied if necessary. Herbicide would be applied as necessary to areas that are reclaimed on an interim basis to control noxious weed species proliferation.

Post-Mining Land Use

The post-mining land use would be consistent with pre-mining land uses, including mineral exploration and development, wild horse habitat, livestock grazing, wildlife habitat, and dispersed recreation. The reclamation plan for the project is designed to reestablish the current land uses by employing advanced reclamation techniques that include:

- Geomorphic design of WRDAs;
- Reclamation concurrent with mining activities when practical and safe;
- Plant growth medium and woody debris salvage, redistribution and where practical "live handling" of plant growth medium and woody debris;
- Engineered drainage channels; and
- Application of seed mixtures and woody species plantings according to landscape position.

Midway would work with the agencies and local governments to evaluate alternative land uses that could provide other long-term socio-economic benefits from the mine infrastructure. The proposed reclamation activities and post-mining land uses are designed to be in conformance with the approved Ely RMP Record of Decision (BLM, 2008b), and White Pine County zoning ordinances.

Post-Mining Topography

The post-mining topography would blend with surrounding topography, interrupt straight-line features, and facilitate revegetation, where practical. Large constructed topographic features, such as the WRDAs, may have rounded crests and variable slope angles to resemble natural landforms, as well as interspersed rock piles or rock features. The final reclamation configuration would provide a stable post-mining landform as determined by both seismic and erosional performance. Slopes would be regraded similar to the existing slopes within the footprints of the WRDAs, the majority being 3H:1V or less with varying slope from virtually flat to small areas of 2H:1V. The heap leach pads reclaimed slope angle would be approximately 3H:1V. This design would mitigate aesthetic impacts, provide stability, promote run-off, and reduce infiltration. To limit erosion, plant growth medium would be placed on the regraded surface, and the surface would be reseeded. The open pits would remain as open pits and would be barricaded to prevent entrance. Post-reclamation topography is shown on Figure 2.3-12.

Plant Growth Medium Management

The salvageable depths of suitable plant growth medium within the proposed disturbance area were estimated based on the soil survey conducted by Tetra Tech (Tetra Tech, 2011). Soil materials are considered unsuitable for revegetation when one or more of the following criteria are met: topsoil and subsoil is less than six inches deep, coarse rock fragments exceed 60 percent by volume, or slope exceeds 65 percent. Surface disturbance would occur in stages (Table 2.3-2). To limit the total area of surface disturbance at any one time during the life of the mine, soil salvage would be delayed as long as practicable.

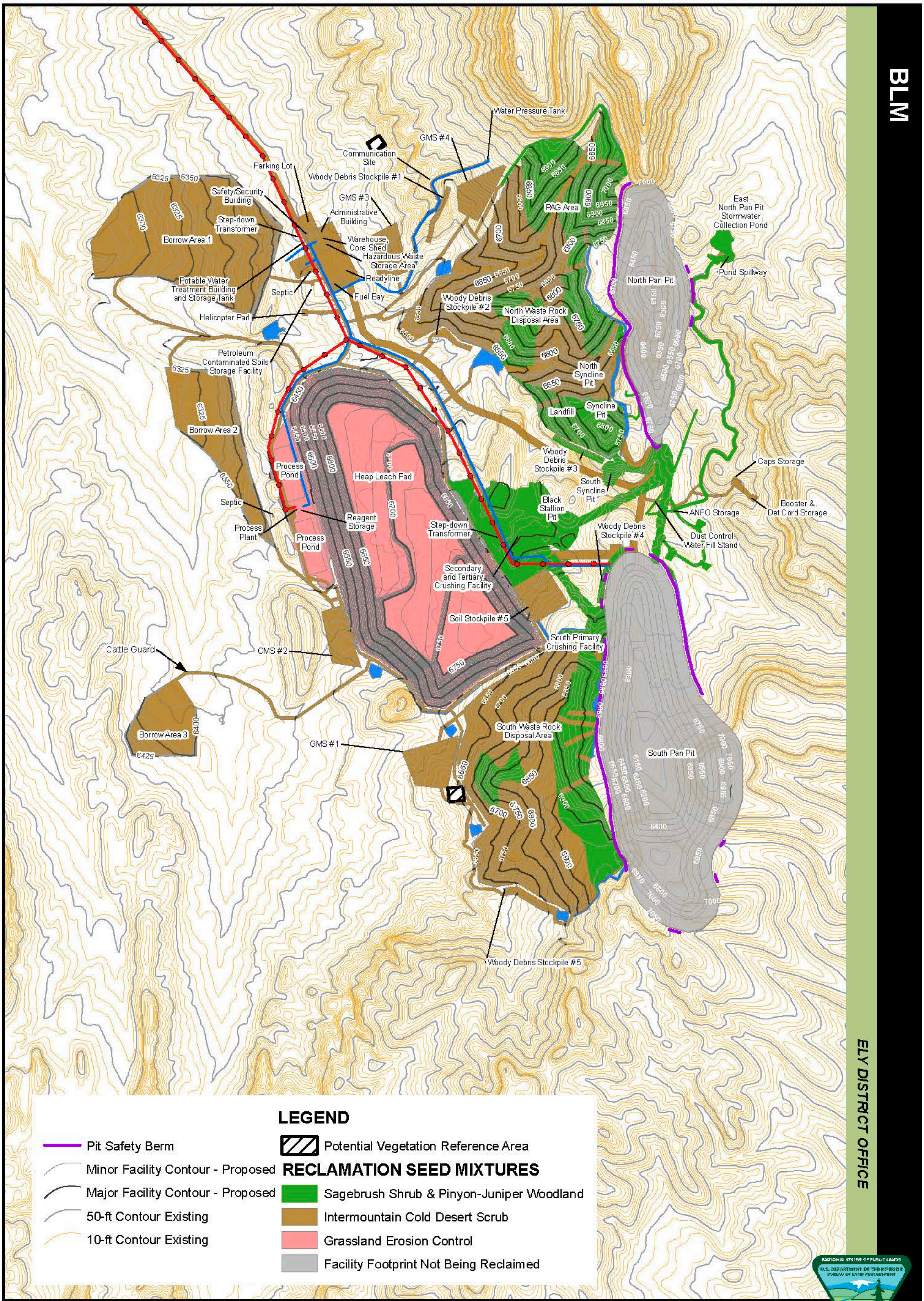

FIGURE 2.3-12
POST MINING TOPOGRAPHY

MIDWAY GOLD US, INC.
PAN MINE PROJECT

SCALE: 1 inch = 1,600 feet

DATE DRAWN: DEC. 18, 2012

0 800 1,600 3,200 Feet

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Twelve inches of soil would be salvaged from Borrow Areas 1 and 2 and along the majority of the mine access road. The associated soil volume is included in the mass balance and soil salvage tables provided in Table 2.3-6. Materials within Borrow Area 3 were determined to not be required. Therefore, a soil survey of this borrow area was not conducted.

Prior to soil salvage, pinyon and juniper trees within the planned area of surface disturbance would be harvested, added to the coarse woody debris stockpiles, or chipped and added to the plant growth medium stockpiles or used as mulch. The remaining woody debris would be directly placed on areas that are being reclaimed or windrowed into long narrow stockpiles at the toe of the disturbed areas for redistribution during reclamation. Unless used directly for concurrent reclamation, salvaged soil would be excavated, loaded, and hauled to one of the designated plant growth medium storage locations shown on Figure 2.3-1. Plant growth medium handling operations would be conducted using dozers, front-end loaders, haul trucks, and other equipment.

Stormwater diversions would be constructed upgradient of each stockpile and berms would be constructed around their perimeters to retain transported sediments from the stockpiles. Plant growth medium stockpiles would be reclaimed on an interim basis as soon as practicable to minimize erosion and non-native or noxious weed infestations

A minimum of 12 inches of plant growth medium would be redistributed on disturbed areas with the exception of the North Pan and South Pan pits. The depth of growth medium applied to each facility is provided on Table 2.3-6.

Prior to plant growth medium redistribution, macro-topographic features would be established on sloped surfaces by randomly creating convex and concave slopes on a scale of one to five feet during final grading and contouring. Exceptions to this include the surface of the heap and process ponds. The plant growth medium would then be distributed down the slopes using dozers. Woody debris stored along the perimeter of the disturbed area would be picked up, or dozed, and randomly redistributed on the re-soiled and reseeded surfaces. Woody debris would be placed on re-soiled areas where obliteration of micro-topographic features by loaders, trucks, and excavators would be insignificant.

Table 2.3-6 Plant Growth Medium Mass Balance and Redistribution Depths and Quantities by Facility

<table>
<tr><th>Total Primary and Secondary Plant Growth Medium Available for Reclamation Cover (cubic yards) [1,2]</th><th colspan="2">Total Primary and Secondary Plant Growth Medium Needed for Reclamation Cover (cubic yards)[2]</th><th colspan="2">Estimated Excess/Deficit (-) at (cubic yards)[2]</th></tr>
<tr><td>3,515,587</td><td colspan="2">3,044,164</td><td colspan="2">471,423</td></tr>
<tr><th colspan="5">Soil Redistribution Depths and Quantities by Facility</th></tr>
<tr><th>Facility</th><th>Disturbed Area (acres)[3]</th><th>Reclaimed Area (acres)[3]</th><th>Soil Cover Depth (feet)</th><th>Soil Cover Volume (cubic yards)</th></tr>
<tr><td>South Pit</td><td>247</td><td>0</td><td>0</td><td>0</td></tr>
</table>

Total Primary and Secondary Plant Growth Medium Available for Reclamation Cover (cubic yards) [1,2]	Total Primary and Secondary Plant Growth Medium Needed for Reclamation Cover (cubic yards)[2]		Estimated Excess/Deficit (-) at (cubic yards)[2]	
3,515,587	3,044,164		471,423	
Soil Redistribution Depths and Quantities by Facility				
Facility	**Disturbed Area (acres)[3]**	**Reclaimed Area (acres)[3]**	**Soil Cover Depth (feet)**	**Soil Cover Volume (cubic yards)**
North Pit	92	0	0	0
South WRDA (Swales)[4]	23	24	1.2	44,803
South WRDA (Side Slopes)[4]	193	198	1.0	320,195
North WRDA (Swales)[4&5]	28	29	1.2	54,109
North WRDA (Side Slopes)[4&5]	236	243	1.0	392,252
Process Yard	34	34	2.5	135,883
Admin Building	4	4	1	5,776
Maintenance Yard	12	12	1	19,957
Secondary and Tertiary Crushing Facility Phase 1	20	20	1	32,428
Secondary and Tertiary Crushing Facility Phase 2	9	9	1	15,262
Conveyor East	4	4	1	7,179
Conveyor South	5	5	1	7,567
Conveyor North	8	8	1	12,745
Mine Access Road from Security Building to Admin Yard	4	4	1	5,840
Mine Access Road from U.S. Highway 50 to Security Building	53	53	1	85,394
Haul Road	12	12	1	18,795
Haul Road WRDA/Pit	3	3	1	4,996
South Pit Crusher	3	3	1	5,501
North Pit Crusher	4	4	1	6,792
Black Stallion Pit	13	13	1.2	24,827
South Syncline Pit	2	2	1.2	4,480
Heap Leach Pad[6]	329	338	2.5	1,364,948
Heap Leach Drainage Fill	8	8	1	13,520
Soil Stockpiles[7]	53	53	0	0
Woody Debris Stockpiles[7]	10	10	0	0
Ancillary Roads	66	66	1	107,254
Explosive Storage Pads	1	1	1	1,663
Parking Lot	0.2	0.2	1	2,839
Security Building	0.2	0.2	1	242
Step Down Transformers	0.2	0.2	1	355
Petroleum Contaminated Storage Area	0.2	0.2	1	371
Heli Pad	0.2	0.2	1	370

Total Primary and Secondary Plant Growth Medium Available for Reclamation Cover (cubic yards) [1,2]		Total Primary and Secondary Plant Growth Medium Needed for Reclamation Cover (cubic yards)[2]		Estimated Excess/Deficit (-) at (cubic yards)[2]
3,515,587		**3,044,164**		**471,423**
Soil Redistribution Depths and Quantities by Facility				
Facility	**Disturbed Area (acres)[3]**	**Reclaimed Area (acres)[3]**	**Soil Cover Depth (feet)**	**Soil Cover Volume (cubic yards)**
Stormwater Collection Pond[8]	5	5	1	7,647
Sediment Basins[9]	9	0	0	0
Runon Diversions[8]	18	1	1	2,066
Material Borrow Areas[10]	210	210	1 [10]	338,106
Inter-facility Disturbance[11]	1,206	1,206	0	0
Existing Exploration Disturbance Inside Fenced Area but Outside Planned Facilities Footprint[12]	17	17	0	0
Authorized Exploration Outside Fenced Area[11]	200	200	0	0
TOTAL[13]	**3,145**	**2,779**	**-**	**3,044,164**

[1]Based on Order 2 Soil Surveys of the Pan Project Area (Tetra Tech, 2011) and Pan Project - Borrow Area Soil Survey Addendum (Tetra Tech, 2012a).

[2]No swell or consolidation factors assumed.

[3]All estimates based on 2D area (i.e. facility footprint) and includes Inter-Facilities Disturbance and Authorized Exploration outside Fenced Area.

[4]Waste Rock Disposal Areas: Reclaimed surface area of swales equals 2D area X 1.03. Reclaimed surface area of side slopes equals 2D area X 1.03.

[5]The North Syncline Pit and Syncline Pit are not included because they exist within the footprint of the North WRDA. They are assumed to have no disturbed or reclaimed area and no soil salvage or replacement in accounting system used for this plan.

[6]Reclaimed surface area of Heap Leach Pad equals 2D area X 1.03.

[7]No soil salvaged within the soil and woody debris stockpile disturbance areas. Following removal of stockpiled materials the soil would be deep ripped and the stockpile areas would be reclaimed.

[8]Soil salvaged from the diversion, stormwater collection pond and borrow areas would be placed in berms, embankments, and stockpiles, respectively and reclaimed on an interim basis. Soils from these areas are included in the soil mass balance even though they would have individual soil stockpiles, which are not shown on report figures.

[9]Soil salvaged from sediment basins would be placed in embankments or berms and concurrently reclaimed. Soil from these areas are not included in soil mass balance.

[10]Borrow area salvage volumes are from Borrow Areas 1 and 2 only. Borrow area disturbance reported here includes Borrow Areas 1, 2 and 3. Materials within Borrow Area 3 were determined not to be needed. Therefore, Borrow Area 3 would likely not be disturbed. As such, approximately 285,000 CY of soil would be needed to apply a 12-inch thick cover of soil on Borrow Areas 1 & 2.

[11]Type and location of disturbance is not specified. Therefore, these facilities are not included in soil mass balance.

[12]Soils within existing disturbance was sidecast along these linear disturbance features. Soils cover volume for this disturbance are not included here. At the time of final reclamation, sidecast soil would be redistributed on these disturbed surfaces and the areas would be reclaimed.

[13]Soils within the water supply pipeline and power line ROW would be windrowed along these linear disturbance features if necessary and reclaimed on an interim basis, and retained for reclamation. Soils within these disturbed areas are not included here. At the time of final reclamation soil would be removed from the windrows, redistributed on these disturbed surfaces and the areas would be reclaimed.

Revegetation

The reclamation plan is designed with the goals of stabilizing mine features, revegetating to reduce runoff and erosion, provide forage for wildlife and livestock, control non-native invasive or noxious species, and reduce visual impacts. As such, the revegetation plan for the project is aligned with these goals, as well as the potential post-reclamation land use(s) of livestock grazing, wildlife, and wild horse use. Specifically, this revegetation plan is designed to return disturbed areas to shrub and grassland conditions that are similar to the existing dominant vegetation community structure of sagebrush shrubland and steppe with lesser amounts of cold desert scrub and pinyon-juniper woodland. The primary revegetation effort would emphasize re-establishment of the native species included in the soil seed bank and revegetation seed mixtures.

The proposed seed mixtures and seeding rates are provided on Table 2.3-7. The application rates listed are for broadcast seeding. The planned locations for the application of each reclamation seed mixture is shown on Figure 2.3-12 according to the slope, aspect, and elevation of the reclaimed surfaces and erosion control needs. To ensure sufficient vegetative cover is achieved to control erosion in critical locations within the reclaimed areas, one of the three reclamation seed mixtures has been specifically developed for rapid establishment of grasses and erosion control.

Table 2.3-7 Reclamation Seed Mixtures

Community Type	Variety	Species	Seeds per Pound	Pure Live Seed (lbs/acre)[7]	Seeding Rate (PLS/ft^2)
Sagebrush Scrub and Pinyon-Juniper Woodland	Western wheatgrass	*Pascopyrum smithii*	110,000	2.00	5.00
	Palmer's penstemon [2, 3, 6]	*Penstemon palmeri*	586,000	0.40	5.00
	Small burnet	*Sanguisorba minor*	49,000	1.00	1.10
	Big sagebrush[2, 4, 6]	*Artemisia tridentata* ssp. *tridentata*	2,500,000	0.10	6.40
	Indian ricegrass[1, 2, 3, 4, 6]	*Achnatherum hymenoides*	161,000	1.75	6.50
	Fourwing saltbush[1, 2, 3, 6]	*Atriplex canescens*	78,000	3.65	6.50
	Cicer milkvetch[1,2,3,5,6]	*Astragalus cicer*	122,000	0.75	2.10
	Hop sage[1,2,3]	*Grayia spinosa*	347,000	0.50	4.00
	Curl-leaf mountain mahogany[2,3,4]	*Cercocarpus ledifolius*	50,100	0.50	0.60
	Green rabbitbrush[1, 2, 3, 4]	*Chrysothamnus viscidiflorus*	732,000	0.40	6.55
			Total	**11.05**	**43.75**
Intermountain Cold Desert Scrub	Basin wildrye[1, 2, 3]	*Leymus cinereus*	135,000	1.15	3.50
	Black sagebrush[1,2,3,4]	*Artemisia nova*	952,000	2.00	43.70
	Indian ricegrass[1, 2, 3, 4, 6]	*Achnatherum hymenoides*	161,000	0.95	3.50

Community Type	Variety	Species	Seeds per Pound	Pure Live Seed (lbs/acre)[7]	Seeding Rate (PLS/ft^2)
	Globemallow[1, 2, 3, 6]	*Sphaeralcea coccinea*	500,000	0.30	3.50
	Fourwing saltbush[1, 2, 3, 6]	*Atriplex canescens*	38,000	1.95	1.70
	Shadscale[1, 3, 4]	*Atriplex confertifolia*	65,000	2.00	3.00
	Penstemon	*Penstemon eriantherus* var. *eriantherus*	500,000	0.30	3.50
	Low sagebrush[1, 3, 4, 6]	*Artemisia arbuscula*	980,000	0.35	7.85
	Winterfat[1, 2, 3, 4]	*Krascheninnikovia lanata*	200,000	0.75	3.50
			Total	**9.75**	**73.75**
Grassland/ Erosion Control	Western wheatgrass[1,2,3,4]	*Pascopyrum smithii*	110,000	2.00	5.00
	Prostrate Kochia[1, 2, 3]	*Kochia prostrata*	502,400	0.75	8.70
	Indian ricegrass[1, 2, 3, 4, 6]	*Achnatherum hymenoides*	161,000	1.20	4.45
	Bottlebrush squirreltail[1, 2,3]	*Elymus elymoides*	192,000	0.50	2.20
	Sandberg's bluegrass[1,2,3]	*Poa secunda*	1,047,000	1.00	24.00
	Needle and thread[1,2,3]	*Hesperostipa comata*	138,000	1.50	4.95
	Winterfat[1, 2, 3, 4]	*Krascheninnikovia lanata*	200,000	1.10	5.00
	Common Sainfoin[1, 2, 5, 6]	Onobrychis viciifolia	48,745	2.00	2.25
			Totals	**10.1**	**56.6**

SHRUB PLANTING			
Location of Planting	**Variety**	**Species**	**Number of Shrub Seedlings per Acre**
WRDA SWALES	Big Sagebrush	*Artemisia tridentata*	250

[1]Rangeland species which supports livestock grazing
[2]Contributes to site stabilization, erosion prevention
[3]Supports wildlife habitat
[4]Existing dominant species
[5]Increases soil productivity
[6]Contributes to visual resources, aesthetics
[7]Application rates would be cut in half in areas that receive live handled soil if non-weedy species re-establishment is predominant and adequate to protect soils from erosion.
Note: The planned locations for the application of each reclamation seed mixture is shown on Figure 2.3-10.
lbs/acre = Pounds Per Acre
PLS/ft^2 = Pure Live Seed Per Square Foot

The Grassland/Erosion Control seed mixture would be used for interim reclamation soil stockpiles and cut-and-fill slopes located along roads and operation yards. Interim reclamation efforts would emphasize erosion control, weed management, and sustaining soil productivity. Interim reclamation would occur on soil stockpiles, cut-and-fill slopes on roads and yards.

All seed mixtures would be certified weed-free and seeds would be tested for purity, and percent live seed prior to use. Dry broadcast seeding would be the primary seeding method and would be accomplished with a cyclone-type broadcast seeder attached to a tractor, or dozer on steeper slopes. Mulch or erosion-control fabric would be applied to erosion-prone areas as needed.

The proposed seed mixture and application rates are subject to modification by the BLM. The actual seed mixture, application rates and locations would be determined prior to seeding based on the results of interim and concurrent reclamation, or BLM recommendations. Revegetation efforts would be determined to be successful and complete upon demonstrating compliance with NDEP (1998) guidelines and upon approval by BLM and NDEP.

Surface Water and Sediment Control

Surface water would be diverted around mine features where practicable through primary stormwater diversions, culverts, and secondary perimeter berms and/or ditches. Silt fences, sediment traps, and/or other BMPs would be used to prevent migration of sediment from disturbed areas until reclaimed slopes and exposed surfaces have demonstrated erosional stability. Stormwater runoff from the reclaimed WRDAs, the heap leach facilities, and other slopes may occur following heavy precipitation events; however, regraded slope angle, revegetation (including plant growth medium placement), and BMPs would be used to limit erosion and reduce sediment in runoff from reclaimed areas. The stormwater collection pond upgradient of the east side of the North Pan Pit, shown on Figure 2.3-1 and discussed in Section 2.3.8 would remain following closure and would be allowed to fill with sediment over time.

Measures to Minimize Loading of Sediment to Surface Waters

In general, the greatest potential risk of sedimentation to dry drainage areas is expected to occur during soil salvage operations, diversion channel construction, soil stockpiling operations, construction of surface facilities, and immediately following implementation of reclamation. BMPs for temporary erosion and sedimentation control of disturbed areas during these times would be used. Active areas of the WRDAs are expected to have minimal runoff and erosion potential, as the waste rock would be both coarse-grained and porous.

Following attainment of reclamation standards, sediment basins would be cleared of accumulated sediments and left in place to promote the post-mining land uses. Where undisturbed catchments report to the North WRDA, diversions would be breached or backfilled and adequately protected to prevent scour along the breach and underflow below the WRDA. The run-on diversion above the heap facility would be left in place and continue to divert flow from up to the 100-year, 24-hour storm event around the heap and process ponds.

The process plant, crusher, and administration/laboratory building areas, as well as, the conveyor and road corridors, would be graded to blend into the surrounding topography and to generally reestablish the existing drainage patterns.

Open Pits

The pit slopes prohibit the reclamation practice of plant growth medium placement and revegetation due to access logistics and safety concerns. The open pit ramps would be barricaded to prevent entrance. There are no plans to attempt soil placement or revegetation within the open pit.

Access would be precluded by the construction of post-mining safety barriers. These barriers would be located at access points present at the time of closure. Pit berms would be constructed along the pit perimeters where necessary to preclude public access and deter livestock. Pit berms would not be constructed in locations where the personal safety of equipment operators would be compromised by constructing the berm, or where a high wall is absent. Pit benches would ravel over time which should effectively break up linear features and create naturally appearing scree and talus slopes. Backfilling or reclamation of the North Pan and South Pan pits are not proposed and exemption would be sought under NAC 519A.250. The satellite pits would be backfilled.

Waste Rock Disposal Areas

The WRDA slopes would be geomorphically designed, constructed, and reclaimed to 3H:1V with small areas of slightly steeper slopes. Reclamation of the WRDAs is summarized below:

- Concurrent reclamation is anticipated to begin the third year of waste rock placement and occur annually throughout the operations to the extent practical and safe;
- Dozers would also be used to create macro-topographic features on the surfaces of the WRDAs prior to the redistribution of plant growth medium;
- The soil surface would be roughened by pitting and gouging, dozer-basins, or discontinuous contour furrowing;
- The depth of soil redistributed in the WRDA swales and side slopes would be approximately 14 and 12 inches, respectively;
- The reclamation seed mixtures would be applied according to the slope, aspect, and elevation of reclaimed surfaces and erosion control needs as shown on Figure 2.3-12;
- Surface mulch or erosion control fabric would be applied in erosion-prone areas; and
- Woody debris windrowed at the toe of the WRDAs or live-handled woody debris would be placed on the surface of the WDRAs.

Geomorphic design of the WRDAs seeks to mimic natural processes and landscapes to the extent practicable. The goal of the geomorphic design is to establish a sustainable landform.

Erosion during an initial equilibration period is anticipated, designed for, and considered acceptable, as long as it stabilizes to a sufficiently low long-term rate.

The WRDAs soil cover is intended to be non-erosive, or, for segments that undergo erosion, able to self-armor in a way that halts erosion before waste rock is exposed or free drainage is compromised. Concurrent reclamation of the WRDAs during the production period would allow mine managers to monitor performance of the geomorphic design, retrofit eroded areas as needed, and make adjustments to yet-to-be constructed segments, as part of an adaptive management strategy.

Depending upon location, the area would then be seeded with the seed mixture shown in Table 2.3-7 or as determined at the time of closure through consultation with the BLM and NDEP.

Heap Leach Pad

The heap leach facilities would be decommissioned in accordance with NDEP regulations and guidelines for closure. A *Tentative Plan for Permanent Closure*, as required by NAC 445A.398, would be included within the water pollution control permit applications for the proposed heap leach facility. A *Final Plan for Permanent Closure*, to include the proposed expansion components, would be prepared and submitted to the NDEP and the BLM two years prior to the anticipated final termination of the heap leach facility operation, as per NAC 445A.447.

Chemical stabilization of the heap leach facilities is required to obtain permanent closure. NAC 445A.379 defines “stabilized” as “the condition which results when contaminants in a material are bound or contained so as to prevent them from degrading waters of the state under the environmental conditions that may be reasonably expected to exist at a site.” Midway anticipates that the spent heap would be allowed to drain with no fresh water rinsing. Final details of heap neutralization and closure would be developed at least two years prior to project closure pursuant to the requirements of NAC 445A.446 and NAC 445A.447.

The heap leach facilities would be constructed in lifts at an approximate height of 20 feet (design benches of 45 feet wide), depending upon operational considerations. The heap leach pad would be constructed in lifts set on a 3H:1V balance line such that the overall reclaimed slope angle would be approximately 3H:1V. Each bench would be regraded to the final slope configuration of approximately 3H:1V. This design would mitigate aesthetic impacts, provide stability, promote run-off, and reduce infiltration.

When no longer required for evaporation of fluids, the surface solution distribution piping would be removed. The side-slopes of the heap would be graded so the final toe is within the interior crest of the perimeter berm. A store and release or ET cover would be installed on the regraded heap surface to limit infiltration of precipitation into the spent ore. The soil cover on the spent heap would allow retention of water in the cover material during snow melt and precipitation to establish grass and herbaceous vegetation. By retaining the water in the soil cover for plant uptake and ET, the amount of water infiltrating is reduced, thus minimizing the draindown solution and steady-state seepage that would need to be managed during closure and post-closure. The recontoured heap would be covered with 2.5 feet of plant growth medium, i.e., cover soil. Midway conducted vadose zone modeling of potential cover soil types from within the mine disturbance and borrow areas. The vadose zone modeling indicates that for representative potential cover soil types, a 2.5-foot-thick layer of cover soil would limit infiltration through the cover to one percent of annual precipitation under average and wet climate conditions (Dwyer Engineering, 2012).

Revegetation of the heap would be carried out following plant growth medium placement. The Grassland/Erosion Control seed mixture would be applied to the heap. The working slopes and the ability to operate equipment safely would determine the method of seeding. Stormwater diversion structures would be constructed upgradient of the heap during project construction to prevent impacts from stormwater run-on. These structures would be maintained to minimize erosion over the long-term.

Midway developed the following conceptual plan for process fluid stabilization:

- After cessation of leaching, process solution would be recirculated from the process ponds to the heap until draindown is less than active evaporation capacity;
- Process solution would be actively evaporated on the heap until draindown flows can be managed through passive evaporation in the process ponds;
- The heap would be regraded;
- Plant growth medium (i.e., cover soil) would be placed on the heap with the aim of limiting long-term flow from the heap to a *de minimus* quantity; and
- The pregnant process pond would be converted to an ET cell to store and release heap draindown through ET until *de minimus* flow is achieved, at which time the ET cell would be closed.

Operational monitoring data for draindown flows and chemistry would be used to confirm modeled flows and submitted as part of the *Final Plan for Permanent Closure* at least two years prior to the closure of the heap leach facility.

Solution Ponds

The process pond solids would be analyzed through the Meteoric Water Mobility Procedure test. Depending on the test results, the solids would be stabilized in place, removed to the heap, or taken off-site for disposal in a permitted facility.

At closure, draindown from the spent heap would be drained to the pregnant pond for evaporation in what is called an "ET cell". The barren pond that would not be used as an ET cell would have the synthetic liner folded into the bottom of the pond and buried in place. The barren pond would then be backfilled and graded to prevent impoundment of water and to blend with the surrounding topography. Revegetation of the pond would be carried out following plant growth medium placement as described above under Growth Medium Management. The Grassland/Erosion Control seed mixture would be applied to the pond area. The working slopes and the ability to operate equipment safely would determine the method of seeding.

Roads

Following road construction, cut-and-fill slopes would be reclaimed on an interim basis as previously described. Roads without a defined post-mining use would be reclaimed when they are no longer needed.

Approximately half the width of the working road surface of the mine access road (or approximately 16 feet) from U.S. Highway 50 to the security building would be reclaimed. Culverts would remain at drainage crossings and modified if necessary. Where necessary, surfaces of the main access road that are reclaimed would be deep ripped, and a 12-inch thick cover of soil from soil stockpiles along the mine access road would be applied to all reworked surfaces. Erosion and sediment control BMPs would be installed and maintained where necessary following seeding activities.

The mine access road from the security building to administration building yard as well as select ancillary roads would be needed for site monitoring and maintenance until final closure is attained. Following attainment of final closure, this section of the mine access road and the remaining ancillary roads would be fully reclaimed unless the BLM identifies a post-mining use for such road and except as required temporarily to access monitoring points (after which it would be reclaimed). Pursuant to NAC 519A.250, reclamation of in-pit haul roads is not proposed. To provide for public safety, these roads would be blocked with rock or soil berms.

The roads that would be removed would be ripped to reduce compaction. Roads with significant cut or fill would be graded to blend into the surrounding topography and to generally reestablish the existing drainage patterns. This would be accomplished by a dozer on slopes flatter than 2.5H:1V or excavators on slopes steeper than 2.5H:1V. Soil would be removed from the windrowed or regular plant growth medium stockpiles and redistributed on the deep ripped, and regraded roads. Erosion control features would be implemented as appropriate on roads that would be reclaimed. Reclaimed roads that could experience continued unauthorized use after reclamation would be blocked with earth or rock berms to eliminate vehicle access.

Surface Facilities or Roads Not Subject to Reclamation

As determined by BLM, roads on public lands suitable for public access or which continue to provide public access consistent with pre-mining conditions would not be reclaimed at closure. All other roads built as part of the Proposed Action would be reclaimed. Some roads would be needed during closure activities to access monitoring points. Any remaining roads would be recontoured and revegetated when no longer needed for monitoring. Surface facilities and roads that would remain as post-reclamation features within the fenced area are shown on Figure 2.3-11 and include the pregnant solution pond to be used as the ET cell, sediment basins and the majority of the run-on diversions to promote the post-mining land uses of livestock grazing and wildlife use, and to protect the spent heap and WRDAs from extreme storm events. The areas not subject to reclamation include the South Pan Pit and North Pan Pit with a total area for both pits at approximately 339 acres (Table 2.3-1). The remaining areas not subject to reclamation as displayed in Figure 2.3-13 and in Table 2.3-8 below is approximately 113 acres totaling approximately 452 acres. With 452 acres of disturbance not subject to reclamation, approximately 3,204 acres of temporary disturbance are expected from the Proposed Action. Table 2.3-1 displays the Proposed Action disturbance acres for which long-term and short-term disturbance is combined.

Table 2.3-1 displays the Proposed Action disturbance. Table 2.3-8 displays the surface facilities and roads not subject to reclamation broken out from Table 2.3-1.

Table 2.3-8 Surface Facilities and Roads Not Subject to Reclamation

Component	Total Disturbance Acres
South Pan Pit	247
North Pan Pit	92
Access Road	53
Monitoring Road	5
Process Pond	8
Stormwater control	47
Total	**452**

Removal of Buildings and Support Facilities

Buildings and support facilities would be reclaimed during the closure period. Buildings and support structures necessary for the closure and reclamation of the heap and processing facilities would remain until these facilities are closed and reclaimed. The main procedures for facility and building decommissioning, site demolition and equipment, and material salvage are briefly summarized below.

Mine facilities, conveyors, crushers, offices, shops and other infrastructure would be demolished (disassembled), removed (salvaged) or hauled to permitted solid or hazardous waste landfills, as appropriate;

- Decommissioning of equipment and materials in contact with cyanide solution and process ponds;
- Reagents and explosives would be removed for use as product at other operations, or appropriately disposed;
- Equipment, tanks, and ponds in contact with acid, caustic, hydrocarbons, etc. would be cleaned before removal;

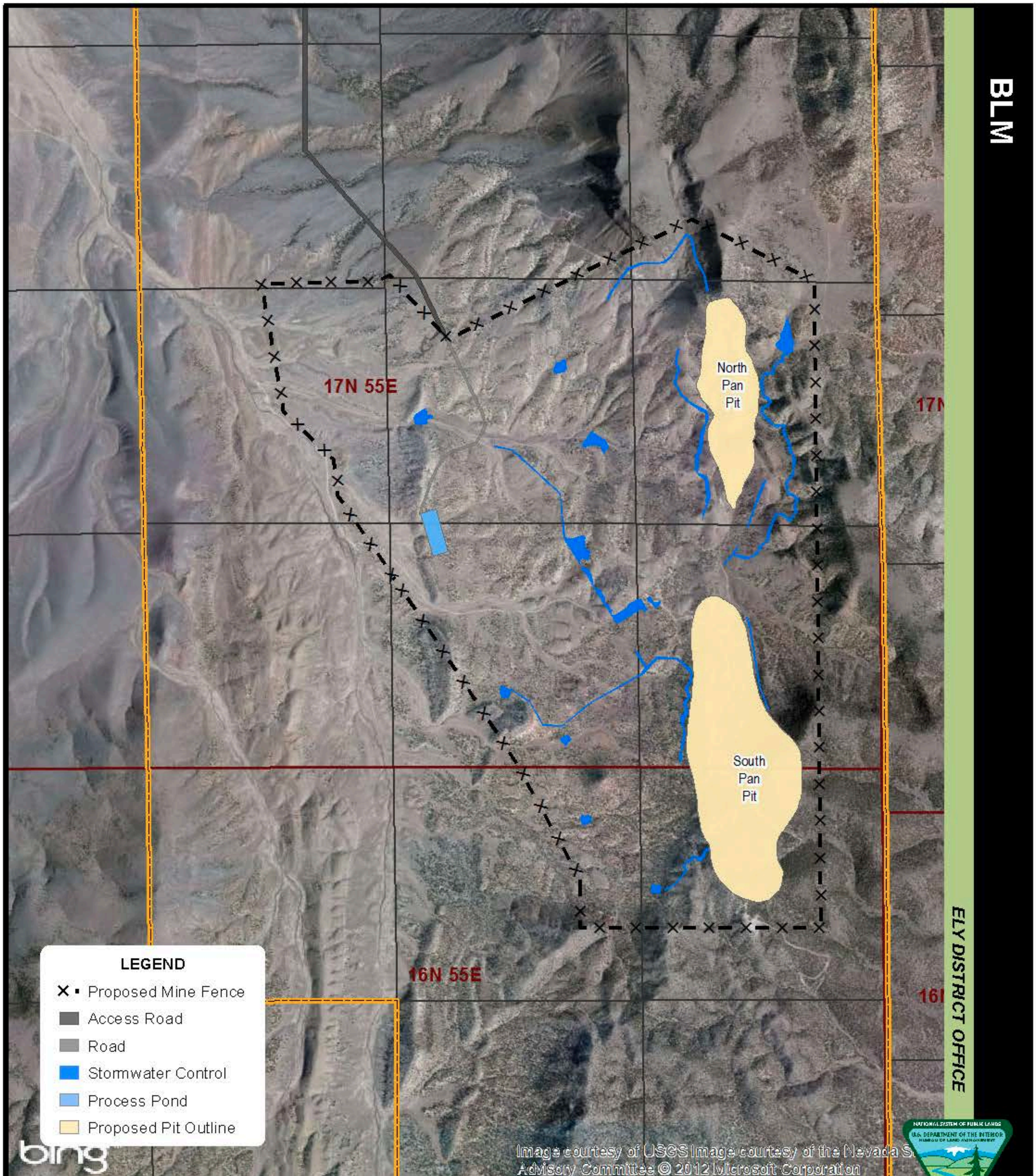

FIGURE 2.3-13
SURFACE FACILITIES AND ROADS
NOT SUBJECT TO RECLAMATION

MIDWAY GOLD US, INC.
PAN MINE PROJECT

SCALE: 1 inch = 3,000 feet

DATE DRAWN: JAN. 4, 2013

0 1,500 3,000 Feet

U.S. BUREAU OF LAND MANAGEMENT
ELY DISTRICT
EGAN FIELD OFFICE

NO WARRANTY IS MADE BY THE BUREAU OF LAND MANAGEMENT AS TO THE ACCURACY, RELIABILITY, OR COMPLETENESS OF THESE DATA FOR INDIVIDUAL USE OR AGGREGATE USE WITH OTHER DATA.

- Following decontamination, demolition, and salvage of facilities, soil and fill materials in the vicinity of the facilities would be visually inspected for spills and sampled as necessary to determine the type and extent of contamination. If contamination is present, remedial plans would be developed. Contaminated soil that cannot be treated in situ would be excavated and disposed in an off-site, permitted solid or hazardous waste landfill, as appropriate;

- Concrete foundations, culverts and pipelines and other inert demolition waste would be left intact or broken up and either:

    - If left intact, covered with 4.0 feet of native fill and at least 0.5 foot of suitable plant growth medium.

    - If broken up, placed in the on-site landfill; and/or covered in-place with three feet of suitable plant growth medium or backfilled against cut banks and highwalls throughout the disturbed area.

- Pipelines would be removed and salvaged, buried in place, or disposed. Pipelines located more than three feet below the ground surface would have their openings plugged with concrete or other suitable materials and left in place;

- Materials removed from the site would be recycled, reused, or disposed of in a manner consistent with local, state, and federal regulations;

- Power lines associated with the plant, mine, and well field would be removed once power is no longer needed during closure and reclamation activities. Unneeded utility poles would be cutoff at ground level and removed;

- Range and wildlife fences not required after operations would be removed; and

- After demolition and salvage operations are complete, the disturbed areas would be covered with plant growth medium and revegetated.

Drill Hole Plugging

Mineral exploration and development drill holes, monitoring, and production wells subject to Nevada Division of Water Resources (NDWR) regulations would be abandoned in accordance with applicable rules and regulations (NAC Chapter 534). Boreholes would be sealed to prevent cross contamination between aquifers and the required shallow seal would be placed to prevent contamination by surface access.

Monitoring wells would be abandoned and reclaimed as required by NAC 534. Well abandonment methods would differ based on well hydrologic conditions (e.g. dry, standing water or artesian) and completion methods (e.g. type of casing – PVC or steel, perforated interval, unperforated, etc.).

Post-Reclamation Monitoring and Maintenance

During operations, annual qualitative monitoring of key indicators of site stability of concurrently reclaimed areas would be conducted. These key stability indicators may include vegetation, surface erosion, sedimentation, and slope stability parameters. If specified performance guidelines are not satisfied then appropriate maintenance activities would be implemented. Following completion of concurrent reclamation activities and until such time that a final closure is attained, maintenance activities would occur as necessary to satisfy performance guidelines. Maintenance activities may include one or more of the following:

- Sediment removal from sediment ponds, stormwater drainage channels, and diversion as necessary to maintain their design capacity;
- The function of temporary erosion control BMPs such as silt fences and straw bales would be maintained. These BMPs would be removed when no longer essential for erosion control;
- Diverting surface water away from reclaimed areas where erosion jeopardizes attainment of reclamation standards;
- Stabilization of rills, gullies, other erosion features or slope failures that have exposed mine waste;
- Noxious weed control; and
- Reseeding or re-application of reclamation treatments would occur in areas where determined through monitoring and agency consultation that reclamation has not yet met reclamation standards.

Quantitative reclamation monitoring to measure compliance with the revegetation success criteria would begin during the first growing season after recontouring and seeding has been completed and would continue for a minimum of three years or until the reclamation success criteria are achieved. Qualitative monitoring of key indicators of site stability would continue, and the reclamation performance management guidelines would apply during this time. The reclamation success criteria would be applied to the data collected in the third year following reclamation. Data from previous years would be used to determine the management needs. Revegetation success would be determined based on *Attachment B-Nevada Guidelines for Successful Revegetation for the Nevada Division of Environmental Protection, the Bureau of Land Management, and the U.S.D.A. Forest Service*.

Midway would submit an annual report on or before April 15th of each year to the BLM and NDEP for the preceding calendar year. The annual report would contain descriptions of the reclamation activities completed during the previous year. The annual report would also include a summary of areas reclaimed and a discussion of the general vegetation performance, surface erosion status, slope stability status, and corrective actions completed and/or proposed.

2.3.14 Environmental Protection Measures

The Environmental Protection Measures (EPMs) have been developed as a way of minimizing or avoiding environmental impacts. Table 2.3-9 provides applicant-committed EPMs that would be implemented by Midway for the Proposed Action. Most of the EPMs presented here have been documented in the POO as regulated by the corresponding regulations outlined in 43 CFR 3809.401 and 43 CFR 3809.420 Performance Standards Applicable to POO.

Table 2.3-9 Environmental Protection Measures by Resource for Proposed Action

Resource	Potential Impacts	Actions to Minimize or Avoid Impacts
Water Resources	• Impacts to surface water • Impacts to groundwater	• Construct roads to BLM road standards. • Close surface drill holes per Nevada Revised Statute 534. • Install erosion control berms, silt fence, straw bales, detention basins or other features as necessary in areas prone to erosion. • Construct and maintain runoff diversions and sediment control basins. • Perform concurrent reclamation to the extent reasonable. • Construct and operate all process systems as no discharge facilities. • Manage any PAG waste rock to minimize generation of acid rock drainage. • Install wells to monitor water quality.
Geology and Minerals	• Removal of mineral resources	• Safety issues related to pits would be addressed with barriers, berms and signage.
Paleontology	• Impacts to paleontological resources of scientific interest	• If paleontological resources of potential scientific interest are encountered (including all vertebrate fossils and deposits of petrified wood), leave them intact and immediately bring them to the attention of the BLM Authorized Officer.
Soils	• Soil erosion (wind and water)	• Use existing roads as much as possible. • Store plant growth media in stable stockpiles. • Upon completion or temporary suspension of mining operations, re-contour disturbed areas to the approximate natural slope with slopes at 3H:1V or to the original topography, whichever is less. • If stockpiles would remain over a growing season, seed with interim seed mix.
Vegetation	• Loss of native vegetation	• Where seeding is required, use appropriate seed mixture and seeding techniques approved by the BLM. • Reclaim with interim and final seed mixes. • Generally, conduct reclamation with native seeds that are representative of the indigenous species present in the adjacent habitat. Possible exceptions would include use of non-native species for a temporary cover crop to out-compete weeds. In all cases, ensure seed mixes are approved by the BLM prior to planting. • Reclaim disturbed areas in accordance with the approved reclamation plan. Disturbance would be recontoured to blend with the natural topography, erosion stabilized, and an acceptable vegetative cover established in accordance with Nevada Guidelines for Successful Revegetation prepared by the Nevada Division of Environmental Protection, the BLM, and the U.S. Department of Agriculture Forest Service. • Curl-leaf mountain mahogany (*Cercocarpus ledifolius* Nutt.), single-leaf pinyon pine (*Pinus monophylla*) and juniper (*Juniperus osteosperma)* trees would be removed only as necessary in proposed disturbance areas.
Non-Native Invasive Species	• Increasing weed infestation from existing local sources	• Midway would continue to work with the BLM, the Tri-County Weed District, and the Newark Valley/Long Valley Cooperative Weed Management Area to prevent the spread of invasive, non-native species in the area affected by the Proposed Action. • Prior to project approval a site-specific weed survey would occur and a weed risk assessment would be completed. • Monitoring would be conducted for a period no shorter than the life of the permit or until bond release and monitoring reports would be provided to the BLM.

Resource	Potential Impacts	Actions to Minimize or Avoid Impacts
		• If the spread of noxious weeds is noted, appropriate weed control procedures would be determined in consultation with BLM personnel. • Should chemical methods be approved, submit a Pesticide Use Proposal to the BLM 60 days prior to the planned application date. • Segregate plant growth media that may contain noxious weed seeds away from plant growth media not containing noxious weed seeds. • Provide information and training regarding noxious weed management and identification to all personnel who would be affiliated with the implementation and maintenance phases of the project. • Vehicles and equipment would be cleaned with power or high pressure equipment prior to entering or leaving the mine. All interim and final seed mixes, hay, straw, hay/straw, or other organic products used for reclamation or stabilization activities, feed, bedding would be certified free of plant species listed on the Nevada noxious weed list or specifically identified by the BLM. • Removal and disturbance of vegetation would be kept to a minimum through construction site management. • Reclamation would normally be accomplished with native seeds only, and when possible would be concurrent with mining activities. These would be representative of the indigenous species present in the adjacent habitat. Possible In all cases, seed mixes would be approved by the BLM prior to application. • No noxious weeds would be allowed on the site at the time of reclamation release. Any noxious weeds that become established would be controlled.
Wildlife	• Mule deer migration	• Consider seasonal distribution of large wildlife species when determining methods used to accomplish weed and insect control objectives. • Reclaim as soon as activities are complete. • Provide gaps in haul road berms for ease of deer crossings
Migratory Birds	• Migratory bird nesting • Active raptor nests	• Protect active raptor nests in undisturbed areas within 0.25 mile of areas proposed for vegetation conversion using species-specific protection measures provided by the BLM, NDOW, and USFWS. Inventory areas containing suitable nesting habitat for active raptor nests prior to the initiation of any project work. • Conduct nesting surveys for migratory birds if disturbance needs to occur between April 1 and July 31. • Comply with Suggested Practices for Raptor Protection on Power Lines – The State of the Art in 2006 (Edison Electric Institute/Raptor Research Foundation). • Where appropriate, restrict permitted activities from May 1 through July 15 within 0.5 miles of raptor nest sites unless the nest site has been determined to be inactive for at least the previous five years. • Prevent access of migratory birds to cyanide solutions in process ponds.
Special Status Animal Species[1]	• Herbicides application in areas of special status species • Sage-grouse leks • Utilities in sage-grouse lek areas • Ferruginous hawk nests • Non-native invasive	• When managing weeds in areas of special status species, carefully consider the impacts of the treatment on such species. Wherever possible, hand spraying of herbicides is preferred over other methods. • Avoid line-of-sight views between power line poles and sage-grouse leks, whenever feasible. • Avoid ferruginous hawk and eagle nests. • Do not conduct noxious and invasive weed control within 0.5 miles of nesting and brood rearing areas for special status species during the nesting and brood rearing season. • Identify pygmy rabbit habitat (either occupied or not), and avoid, including a 200-foot buffer. Conduct bat surveys, where appropriate. • Do not disturb bats while they are hibernating.

Resource	Potential Impacts	Actions to Minimize or Avoid Impacts
	species control in special status species areas • Pygmy rabbits and pygmy rabbit habitat • Special status bat species	• Line Strike diverters and perch deterrents to be implemented on all power line alternatives. • Control litter to minimize the supplemental feeding of raven. • Obtain raven depredation permit from USFWS or operate under NDOW permit to address raven nesting on facility structures.
Wetlands	• Disruption of wetlands	• Avoidance of disturbance in wetlands.
Range Resources	• Impacts to livestock • Loss of forage	• Fence active mine areas to exclude livestock. • Reclaim disturbed areas to restore forage resources.
Wild Horses	• Impacts to wild horses • Loss of forage	• Road signs and speed limits for safety and protection of wild horses. • Fence active mine areas to exclude horses. • Reclaim disturbed areas to restore forage resources.
Land Use and Access	• Post-mining configuration of access roads • Public safety	• Maintain security fencing and signage during operations to control access to active mine operations. • Provide permanent barriers and berms to control public access to pit highwalls. • Establish post-mining access in conjunction with BLM travel management plan. • Traffic control measures would be used during operations.
Recreation	• Potential restriction of recreation use	• Reclaim as soon as activities are complete to restore recreation access.
Air Quality	• Fugitive dust from roads and loading/dumping • Exhaust emissions • Reduction of airborne fugitive dust • Fugitive dust during mining activities	• Use dust abatement techniques on unpaved, unvegetated surfaces to minimize airborne dust. • Conduct maintenance on equipment to ensure proper function. • Post and enforce speed limits (e.g., 25 miles per hour). • Compliance with NDEP air permit.
Visual Resources	• Light pollution • Viewshed protection	• Utilize anti-glare light fixtures with fugitive light control designs to limit light pollution. • Reclaim disturbed areas as soon as activities are complete. • Light fixtures would be placed at the lowest practical height and would be directed to the ground and/or work areas to avoid being cast skyward or over long distances. • Berms required for haul roads would naturally block vehicle lights emanating from haul roads and the pit areas that may be directed toward public roads during travel. In the pit and WRDAs, the lights and equipment would be naturally shielded by the pit walls and distance. In the project area the lights would be naturally shielded by distance from U.S. Highway 50, which is over five miles away. • Light fixtures would incorporate shields and/or louvers where possible and be full cut-off type. • Buildings would be painted or stained to produce flat-toned, non-reflective surfaces. • The use of dimmers, timers, and motion sensors would be installed where appropriate. • Fugitive dust would be minimized in order to reduce "sky glow," by reducing the light reflectance from the dust particles.
Cultural	• Cultural resource	• Ensure that all activities associated with the undertaking, within 100 meters of a discovery, are halted

Resource	Potential Impacts	Actions to Minimize or Avoid Impacts
Resources	protection	and the discovery is appropriately protected, until the BLM authorized officer issues a Notice to Proceed. • BLM would determine level of inventory needed (Class I, II, or III, reconnaissance or none). • Prior to surface disturbing activities, inventories would be conducted by permitted archeologist for unsurveyed sites or those not evaluated within the past 10 years. • All historic properties and cultural resources would be avoided if possible. • If avoidance is not possible, develop treatment plan for the historic properties affected by the proposed disturbance. • Submit all cultural reports to the BLM. • Inform all persons associated with the project that knowingly disturbing cultural resources (historic or archaeological) or collecting artifacts is illegal.
Hazardous and Solid Waste/Hazardous Materials	• Accidental spills of hydrocarbons that could contaminate water, soil, and vegetation • Storage of hazardous materials • Handling of hazardous and solid wastes • Transporting hazardous materials • Potential of public mine site accidents	• Take measures to isolate, control, and properly dispose of toxic and hazardous materials. • Remove and properly dispose of all trash, garbage, debris, and foreign matter. Maintain the disposal site and leave it in a clean and safe condition. Do not allow burning at the site without prior approval. • Do not drain oil or lubricants onto the ground surface. Immediately clean up any spills under 25 gallons; clean up spills over 25 gallons as soon as possible and report the incident to the BLM and NDEP. • Containerize petroleum products such as gasoline, diesel fuel, and lubricants in approved containers. • Properly store hazardous materials in separate containers to prevent mixing, drainage, or accidents. • Clean up spills in accordance with NDEP guidelines • Restrict public access locally during active mining.

[1]USFWS Threatened, Endangered, Candidate, and Proposed Species; State Protected Species; BLM Sensitive Species

PAG = Potentially Acid Generating

USFWS = United States Fish and Wildlife Service

2.4 Alternatives to the Proposed Action

The need for a wide, objective review of potential alternatives stems from 40 CFR 1500.2(e), which states that the NEPA process must "identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment," and also as directed under 40 CFR 1501.2(c) which states that agencies need to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved resource conflicts concerning alterative uses of available resources...".

The Alternatives proposed for detailed analysis in this EIS meet the following criteria of a "reasonable alternative":

- Generally meets the Purpose and Need and is needed to address one or more significant issues;
- Would be subject to the "rule of reason," with the alternative being in proportion to the significance of the environmental impacts related to the Proposed Action. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense; and
- Would be environmentally reasonable, that is would not be obviously environmentally inferior to other action alternatives.

All the alternatives considered are listed in Table 2.4-1, followed by summary comments on if they met the above criteria.

Table 2.4-1 Alternatives Considered in the Analysis

Alternatives	Meets Purpose & Need	Feasible	Environmentally Reasonable	Carried Forward for Analysis
Relocating Mining and Leaching Facilities	N	N	N	N
Underground Mining	N	N	N	N
Full Backfill of Open Pits During Reclamation,	Y	N	N	N
Partial Backfill of Open Pits	Y	N	Y	N
Concurrent Backfilling of Open Pits	Y	N	N	N
In-pit Crushing and Conveyor Transport	Y	N	N	N
Leach Pad Site Selection	Y	N	N	N
Waste Rock Disposal Site Design Alternative	Y	Y	Y	Y
Northeast Access Road	Y	N	N	N
Northeast Power Line	Y	N	Y	N
Southwest Access Road	Y	N	Y	N
Southwest Power Line	Y	Y	Y	Y
No Action	Y	Y	Y	Y

Based on the criteria for reasonable alternatives, through internal scoping discussions, and with input from public scoping comments, three alternatives to the Proposed Action were identified for evaluation in this EIS. The three alternatives discussed further in this EIS include the No Action Alternative, Waste Rock Disposal Site Design Alternative, and the Southwest Power Line Alternative. Alternatives considered but eliminated from detailed analysis with the reasons for their elimination, are described in Section 2.5.

2.4.1 Waste Rock Disposal Site Design Alternative

The waste rock disposal site designs for both North Pan and South Pan pits were developed by Midway during the initial phases of the design process. At that time the mining concept included in-pit crushing for both ore and waste rock. By hauling the waste rock via a conveyor system to its final placement location, geomorphically sculpted, final waste rock pile geometries would be easy to make. However, the feasibility study economic analysis subsequently determined that conveyor placement of the waste rock was not economically feasible because of the need for flexibility to separately handle PAG material and a more complex mining schedule than initially anticipated. With truck haulage, the geomorphic designs are still technically feasible but much more costly and difficult to construct than conventional waste rock disposal area designs.

Several advantages, both environmental and economic, may be realized by adopting conventional waste rock disposal designs. The WRDA sites constructed with conventional techniques incorporate a smaller footprint than the geomorphic designs included in the Proposed Action design. The disturbed area for the alternative design waste rock disposal areas would be approximately 97, 102, and 202 acres respectively for the North West, North East, and South Pit WRDAs (Figure 2.4-1). This would result in a decrease of 79 acres of disturbance compared to the Proposed Action. In particular, the alternative North West and North East WRDA are different than the Proposed Action North Pan WRDA (Figure 2.4-1 compared to Figure 2.3-4). The North East site would move much of the waste rock further away from sage-grouse Preliminary Priority Habitat (PPH) and would impact less sage-grouse Preliminary General Habitat (PGH). Sage-grouse habitat types are discussed further in Section 3.8. This alternative would also reduce the height of the North West WRDA keeping it out of view from U.S. Highway 50 as compared to the Proposed Action design for the North Pan WRDA. The alternative, standard waste rock placement designs would result in a significant reduction in the cost of construction and reclamation.

2.4.2 Southwest Power Line Alternative

To address concerns of potential impacts to sage-grouse from the Proposed Action power line a Southwest Power Line alternative is being considered that would route the power line from the junction of Strawberry Road and U.S. Highway 50 heading west approximately five miles and then parallel to State Route (SR) 379 south and southeast approximately 12 miles. At this point the power line would head east away from SR 379 through the Newark Valley and then north for approximately 15 miles terminating on the west side of the mine site (Figure 2.4-2). From the point where the power line heads east away from SR 379, a power line maintenance road would be constructed. The total length of this alternative is approximately 32 miles.

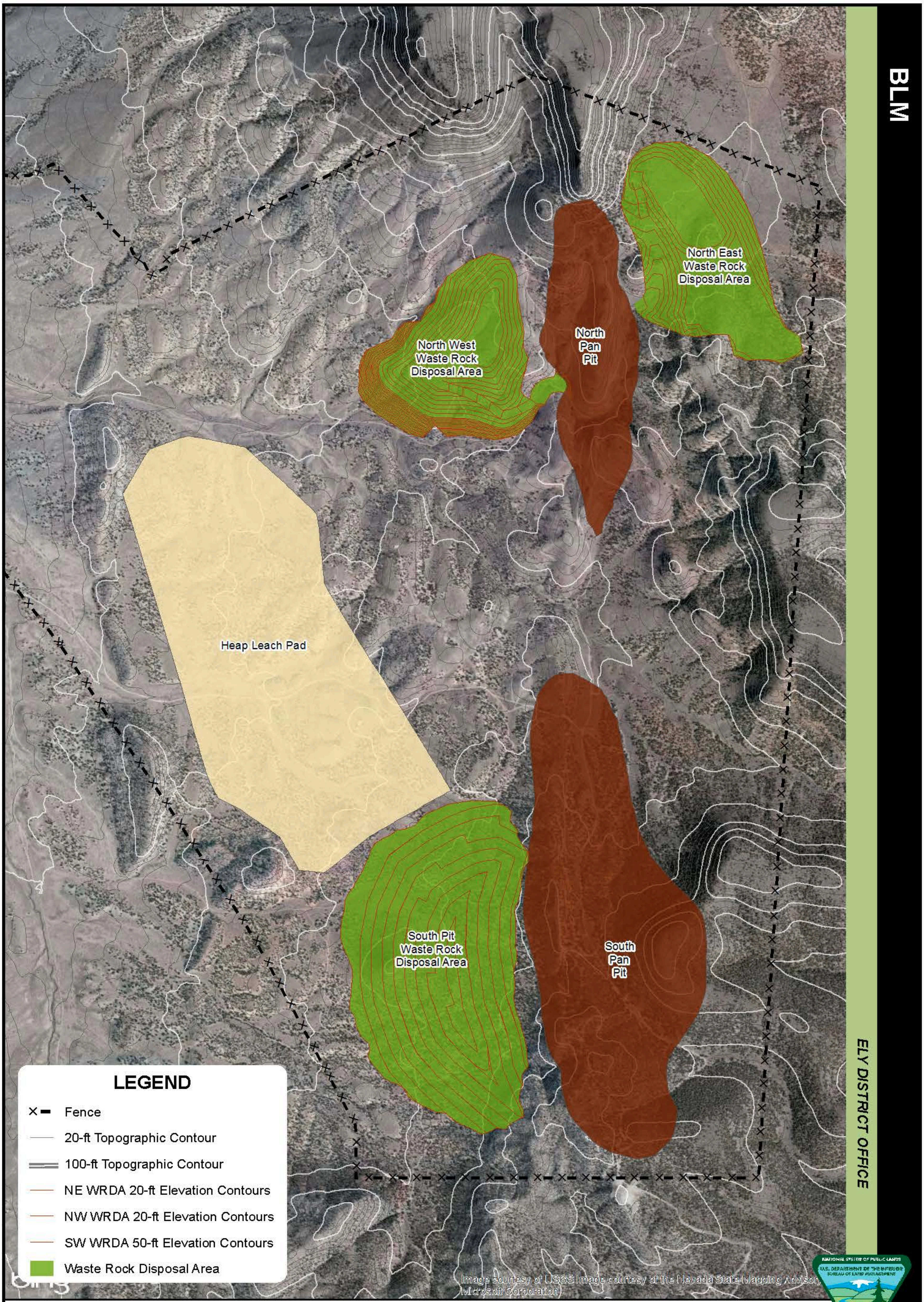

FIGURE 2.4-1
WASTE ROCK DISPOSAL SITE
DESIGN ALTERNATIVE

MIDWAY GOLD US, INC.
PAN MINE PROJECT

SCALE: 1 inch = 1,250 feet

DATE DRAWN: JAN. 4, 2013

0 625 1,250 2,500 Feet

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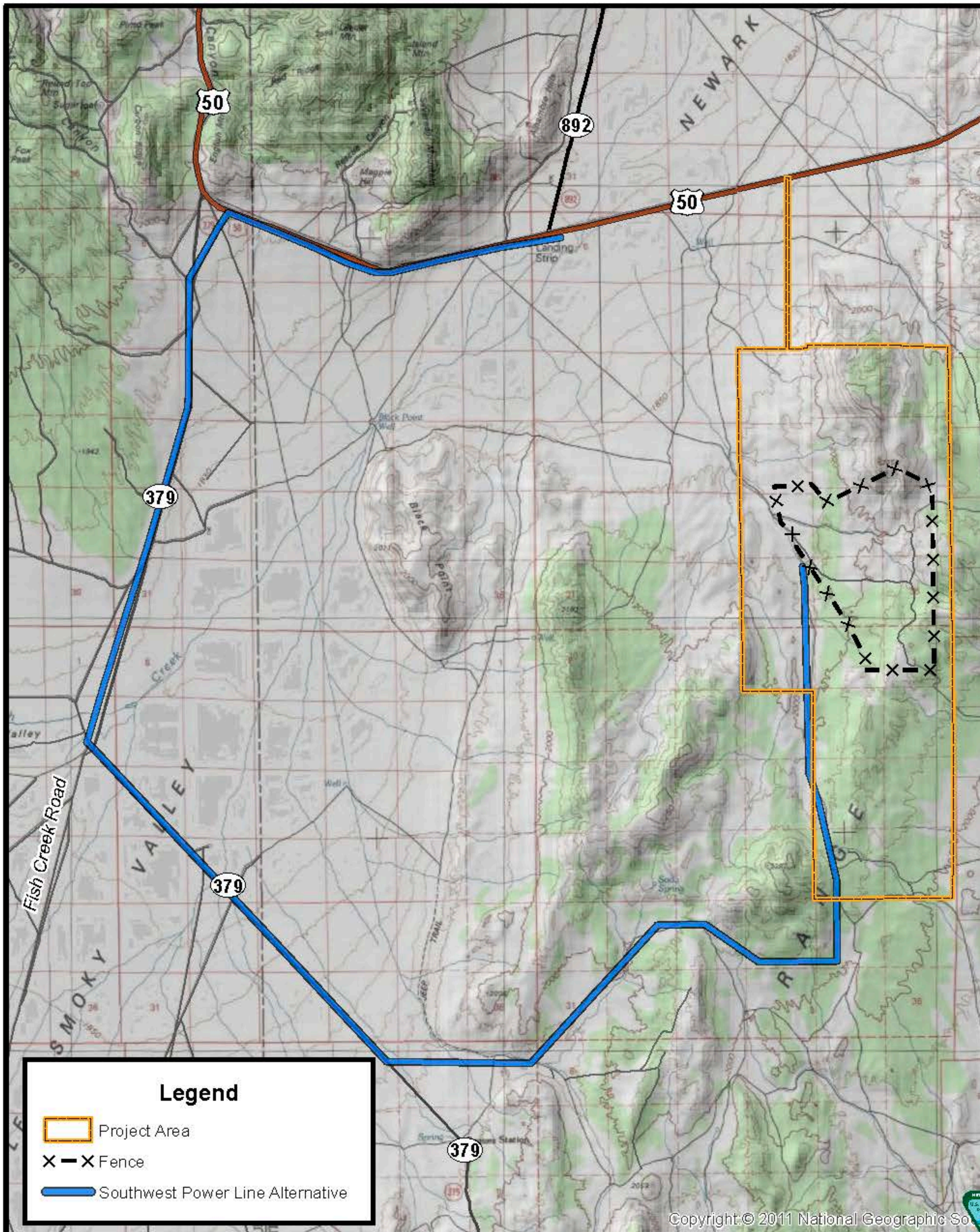

FIGURE 2.4-2
SOUTHWEST POWER LINE ALTERNATIVE

MIDWAY GOLD US, INC.
PAN PROJECT

SCALE: 1 in = 2 miles

DATE DRAWN: JAN. 4, 2013

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This power line would be of the same 69kV, mono-pole design as the Proposed Action power line (see Figure 2.3-2). Construction of this power line would disturb approximately 68 acres. Leks are located directly northwest and north of the mine site. This alternative is approximately five miles further away than the Proposed Action alignment and would be less visible than the Proposed Action power line. The total length of this alternative is approximately 32 miles.

2.4.3 No Action Alternative

Under the No Action Alternative, activities associated with the Proposed Action would not occur. Mineral resources in these areas of expansion would remain undeveloped. The construction and operation of open pits, WRDAs, heap leach facilities, and support facilities would not occur. However, the authorized exploration operations for the project as discussed in Section 2.2 would continue.

2.5 Alternatives Considered but Eliminated from Detailed Analysis

A variety of alternatives were identified and proposed by BLM, NDOW, and Midway but were eliminated from further analysis. These included alternatives such as relocating mining and leaching facilities, underground mining, full backfill of open pits during reclamation, partial backfill of open pits, concurrent backfilling of open pits, in-pit crushing and conveyor transport, leach pad site selection, and several power line and road alternatives. Each of these alternatives was analyzed to determine if they met the criteria identified in Section 2.4. Table 2.4-1 lists each alternative that was considered and identifies whether the alternative met the criteria for carrying the alternatives forward in the analyses.

2.5.1 Locating Mining and Leaching Facilities Elsewhere

Relocating the mining and leaching facilities would be technically infeasible and would not meet the stated Purpose and Need. Mining must occur at the orebody, and the leaching facilities must be as near to the mine as possible for economic and logistical purposes. Relocating mining to another site is impossible because the orebody is geographically fixed and the mining must occur at the site of the orebody. The heap leach facilities are thus equally fixed to the proximity of the orebody.

2.5.2 Underground Mining

Mining the low-grade, near surface orebodies with underground mining techniques would not be technically or economically feasible. Underground mining would also entail greater physical safety hazards, higher mining unit costs (increased labor and electrical power requirements), and potential subsidence hazards.

This would render the overall project infeasible.

2.5.3 Complete Backfilling of all Open Pits during Reclamation

The Proposed Action includes complete backfilling of the Black Stallion, South Syncline, Syncline, and the North Syncline satellite pits. Backfilling all of the open pits including the North

Pan and the South Pan pits with waste rock during final reclamation activities would reduce the volume of material permanently placed on the WRDAs, incrementally reducing their height and areas. It would also reduce the depth of the final open pits.

However, double handling of waste rock by completely backfilling the North Pan and South Pan pits during reclamation would render the overall project economically infeasible. The amount of ore placed on the leach pad would not be able to be returned to the open pits as backfill because the safest location for permanent disposal of the spent leach material is on the impermeable leach pad where residual heap draindown can be managed without discharge to the environment. The area disturbed related to temporary WRDAs would be roughly equivalent to the Proposed Action.

This alternative would be technically and economically infeasible.

2.5.4 Concurrent Backfilling of Open Pits

Backfilling all open pits with waste rock concurrent with mining would reduce the volume of material placed on the waste rock facilities incrementally reducing their height and areas, compared to the Proposed Action configuration (Section 2.3.3).

However, concurrent backfilling consists of opening the first portion of a pit and disposing that waste rock in an external WRDA. Thereafter, all waste rock produced in that pit would be placed as backfill in the mined out portion of the same pit. Coal strip mines commonly practice this method.

Orebodies of the North Pan and South Pan pits occur on the sides and floors of the pits in such a manner that active mining is necessary throughout most of the pit areas throughout their mine lives.

Placing waste material in any portion of the pit would reduce the economic extraction of the underlying or adjacent orebody as well as increase the physical safety hazards from attempting to simultaneously mine and backfill in the close confines of the pits. Also, placing waste rock back into these open pits would require temporary stockpiling of the waste rock outside the pits and then relocating the material back to the mined out portions of the pits.

This alternative would be technically and economically infeasible.

2.5.5 Partial Backfilling of the Open Pits

Backfilling either the North Pan or South Pan pits with waste rock would reduce the volume of material placed on the waste rock facilities incrementally reducing their height and areas, compared to the Proposed Action configuration. This concept assumes that the first pit would be completely mined out before a second pit was started and that all of the waste rock from the second pit could be placed into the first pit. This concept was considered by Midway during feasibility studies but was found to be technically infeasible due to ore production scheduling issues.

The scheduling issues directly relate to the geometry and nature of the ores in the North Pit and South Pit. The ore within the North Pit is much harder than that in the South Pit thereby making the gold leaching recovery easier in the South Pit ore. The ore in the South Pit is divided into a surface zone and a bottom zone. Before any of the lower ore can be accessed, extensive stripping of waste rock must be completed near the surface.

With these characteristics considered, the only way to obtain an economically viable and consistent production rate for the life of the mine would be to initially obtain full production from the upper ore zone of the South Pit. While this is taking place, a small volume of the hard ore would need to be mined from the North Pit to be used as an initial over liner layer of the leach pad. Small volumes of the North Pit ore would be needed periodically while the South Pit is mined in order to gradually increase the size of the leach pad base. While the North Pit is producing ore, overburden waste rock would be excavated from the South Pan Pit to uncover a lower ore zone. Near the completion of mining the North Pan Pit, the South Pan Pit would be placed back into ore production. Some mining of ore in both pits would occur during the life of the mine in order to obtain a suitable blend of ores for the heap leaching process. At this point in production, almost all of the waste rock in the mine would have already been removed and placed in the permanent waste rock disposal areas and very little would be left to place in the North Pit as backfill.

This alternative would be technically and economically infeasible.

2.5.6 In-Pit Crushing and Conveyor Transport

The concept of using in-pit crushing and conveyor transport to handle ore and waste was initially considered by Midway in the Pan Preliminary Engineering Assessment. It was also evaluated by Midway in the Pre-Feasibility Study for Pan. The initial mine schedules and waste rock impoundments were based upon this concept. This method would eliminate the need for hauling this material out of the pits with a truck fleet. This would reduce on-site fuel consumption and eliminate the need for wide haul roads external to the open pits. This would include two separate crushers and conveying systems, one for the ore and one for waste rock.

If PAG waste rock material were to be identified during mining, it would need to be selectively placed in the waste rock disposal facilities. Since the in-pit crusher and conveying system could not provide the required selectivity and mobility for PAG material, it was concluded that several haul trucks would be needed, thus dictating the need for wider external haul roads and a truck maintenance facility. The in-pit conveying system would also require a higher electric power requirement, which is beyond Mt. Wheeler Power’s capability. The additional need for electric power to service an in-pit crushing and conveying system would also require on-site power generation.

Any economic benefit that might be obtained by the use of in-pit crushing and conveying was lost by the need to add a separate crusher/conveyor system for PAG waste rock, by adding several trucks and by the higher electric power requirement.

This alternative would be economically infeasible.

2.5.7 Leach Pad Site Selection

Multiple sites for the heap leach pad were analyzed and considered by Midway early in the design process (Figure 2.5-1). The selection of the heap leach pad was determined based on whether the site had the capability of holding the projected ore volume and minimizing the area of disturbance. Selecting more than one heap leach pad site would increase the disturbance area and render the project economically infeasible.

Site A was selected because it is the only option that satisfies all of the necessary leach pad technical design criteria as mentioned above. Sites B, C, D and sites east of Pancake Ridge were found to be technically and economically infeasible for the following reasons:

Site B:

- Area deemed not large enough to process all of the ore as outlined in the POO; and
- Extreme vertical lifting of the ore.

Site C:

- Area deemed not large enough to process all of the ore as outlined in the POO.

Site D:

- Prohibitively long haul distances between the pits and the pads; and
- Too close to sage-grouse leks.

Sites East of Pancake Range:

- Prohibitively long haul distances between the pits and the pads; and
- Extreme vertical lifting of the ore.

2.5.8 Northeast Access Roads

Under the Proposed Action the access road is located north of the mine within two miles north and northwest of two sage-grouse leks. To address potential impacts to sage-grouse leks, three northeast access road alignment options were considered (Figure 2.5-2).

Option 1 would be to follow an existing primitive road from U.S. Highway 50, north of the project area and head southeast approximately 2.6 miles then directly south on an undisturbed drainage for approximately 2.5 miles to an east-west road directly adjacent to the project area.

Option 2 would be to access the same existing primitive road from U.S. Highway 50 as described in Option 1, north of the project area. This road heads south to southeast and would connect to the existing east-west road and then proceed approximately 1.5 miles west to the project area.

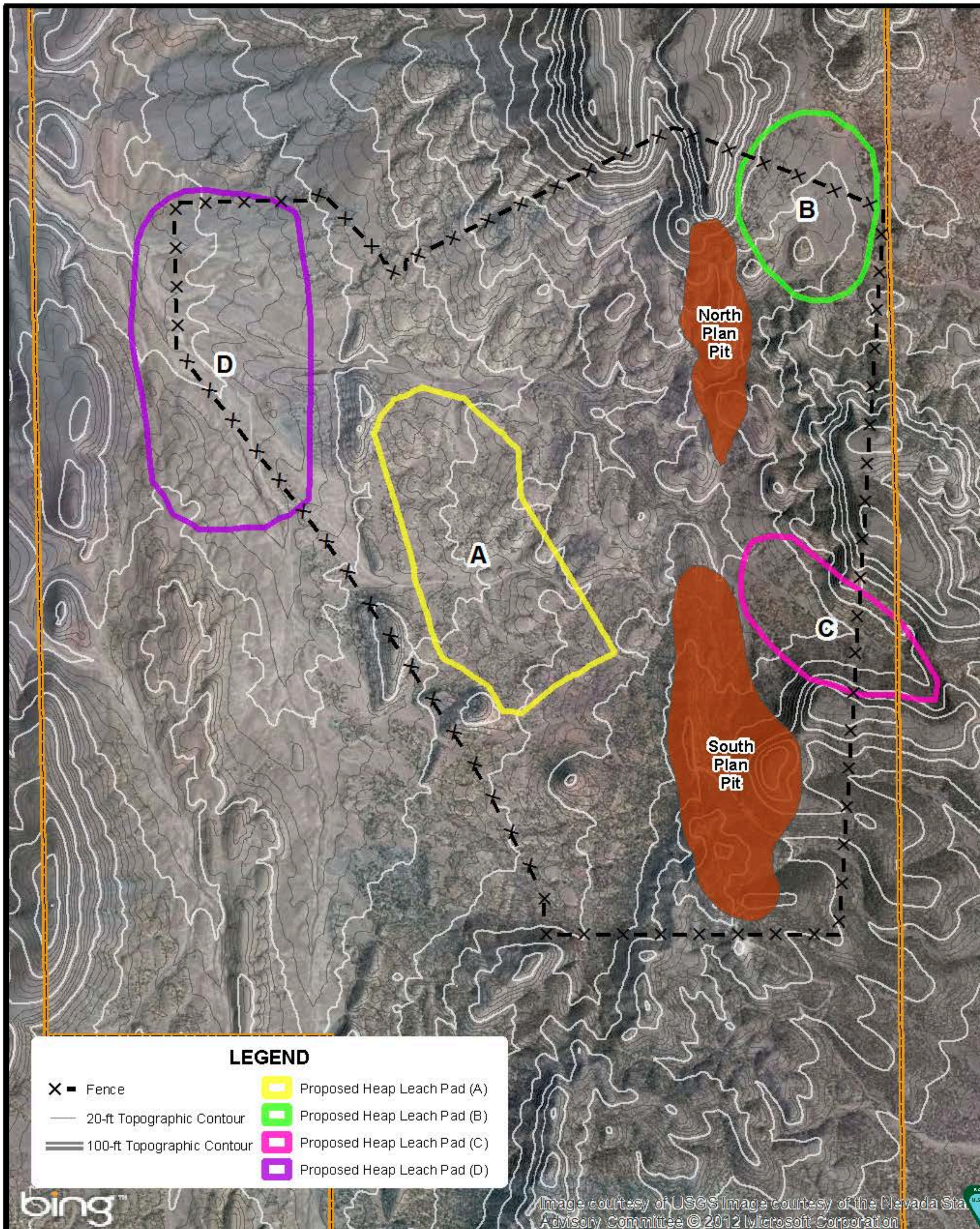

FIGURE 2.5-1
LEACH PAD SITE SELECTION ALTERNATIVES

MIDWAY GOLD US, INC.
PAN MINE PROJECT

SCALE: 1 inch = 2,700 feet

DATE DRAWN: JAN. 4, 2013

0 1,350 2,700 5,400 Feet

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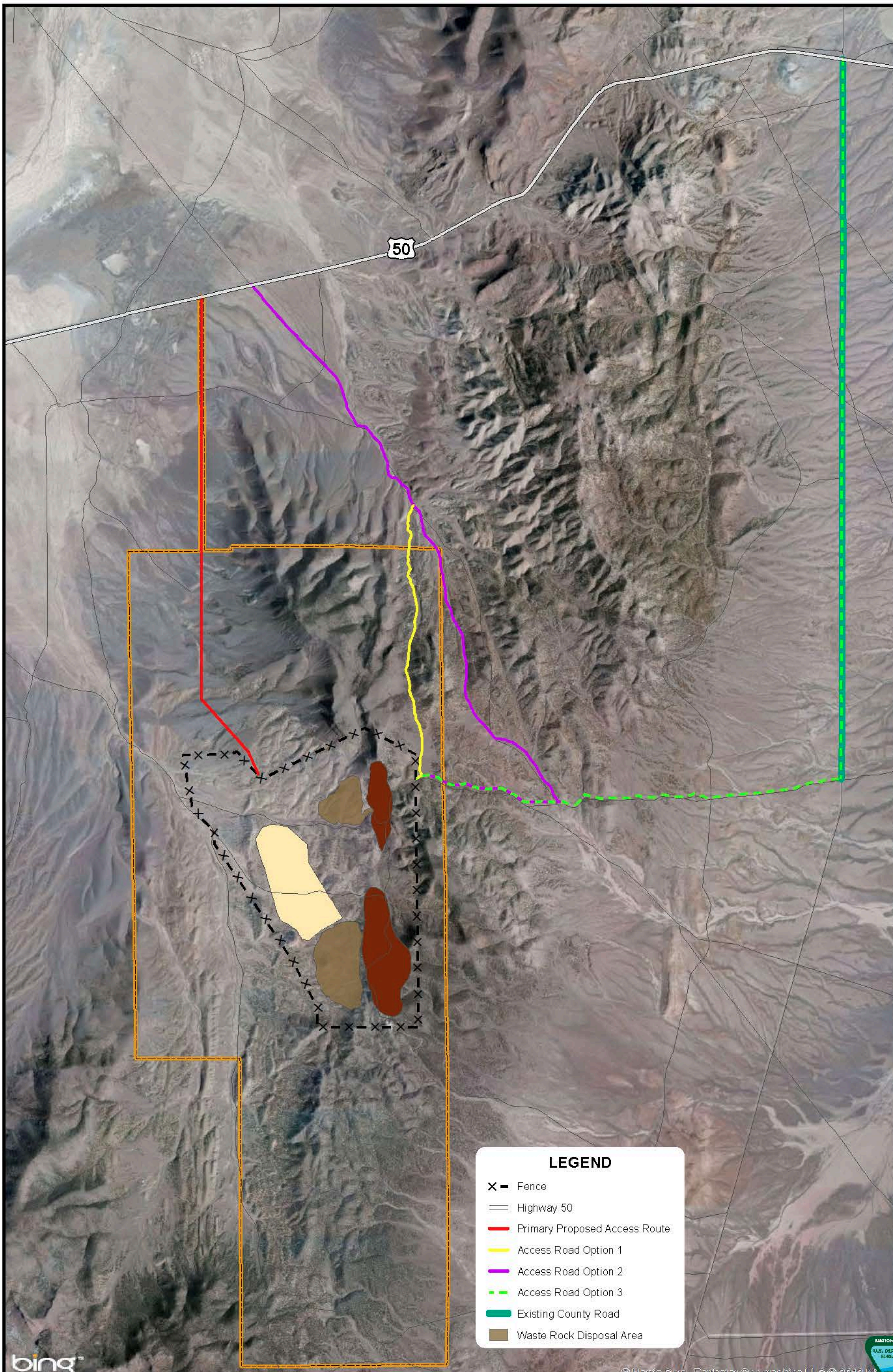

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FIGURE 2.5-2
NORTHEAST ACCESS ROAD ALTERNATIVES

MIDWAY GOLD US, INC.
PAN MINE PROJECT

SCALE: 1 inch = 1 miles

DATE DRAWN: JAN. 4, 2013

0 0.5 1 Miles

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Option 3 would be to access an existing road from U.S. Highway 50, approximately three miles east of Pancake Summit in Newark Valley and head directly south approximately seven miles on the county road to the existing east-west road and then proceed approximately four miles west to the project area.

Portions of the road topography would reduce noise and visibility impacts to the leks; however, this would involve environmental impacts due to the increased disturbance required for a major road building effort. Option 1 is located in an undisturbed small canyon requiring steep grades, tight curves, and extensive cut-and-fill through the rock slopes of the canyon. The steep terrain would impose safety issues as well as making it practically impossible to fully reclaim. Option 2 would impact approximately 1.5 miles of the historic Lincoln Highway and Option 3 would impact approximately four miles of the historic Lincoln Highway. A sage-grouse lek is located north of the project area within very close proximity to Options 1 and 2 and within approximately one-mile of Option 3, ruling out these options as not environmentally reasonable.

These access road alternative options would not be environmentally reasonable.

2.5.9 Northeast Power Line and Associated Maintenance Road

To address concerns of potential impacts to sage-grouse a Northeast Power Line and Associated Maintenance Road alternative was considered. This alternative would extend the power line parallel to U.S. Highway 50 to a point 6.5 miles east of Strawberry Road and then southeast terminating on the west side of the mine site (Figure 2.5-3). A lek is located directly north of the mine site, approximately 0.62 miles from U.S. Highway 50. The total length of this alternative is approximately 20 miles.

The Northeast Power Line alternative crosses through steep and rugged terrain limiting the development of the power line and the associated road. A road would be required due to Mt. Wheeler Power's lack of helicopter use for power line construction. Due to the steepness of the terrain the development of this road would involve a relatively major road building effort requiring disturbance from 60 feet to over 120 feet wide from top to bottom of cut and fill slopes instead of the typical two-track road at approximately 12-foot wide. Maintenance of the road would also be required during all seasons in order to provide for continuous power service to the mine site.

This alternative would be technically feasible however the cost of construction, management, and maintenance of the power line would be economically infeasible. Construction of the road would also involve environmental impacts due to the increased disturbance required for a major road building effort.

This alternative would not be environmentally reasonable and would be economically infeasible.

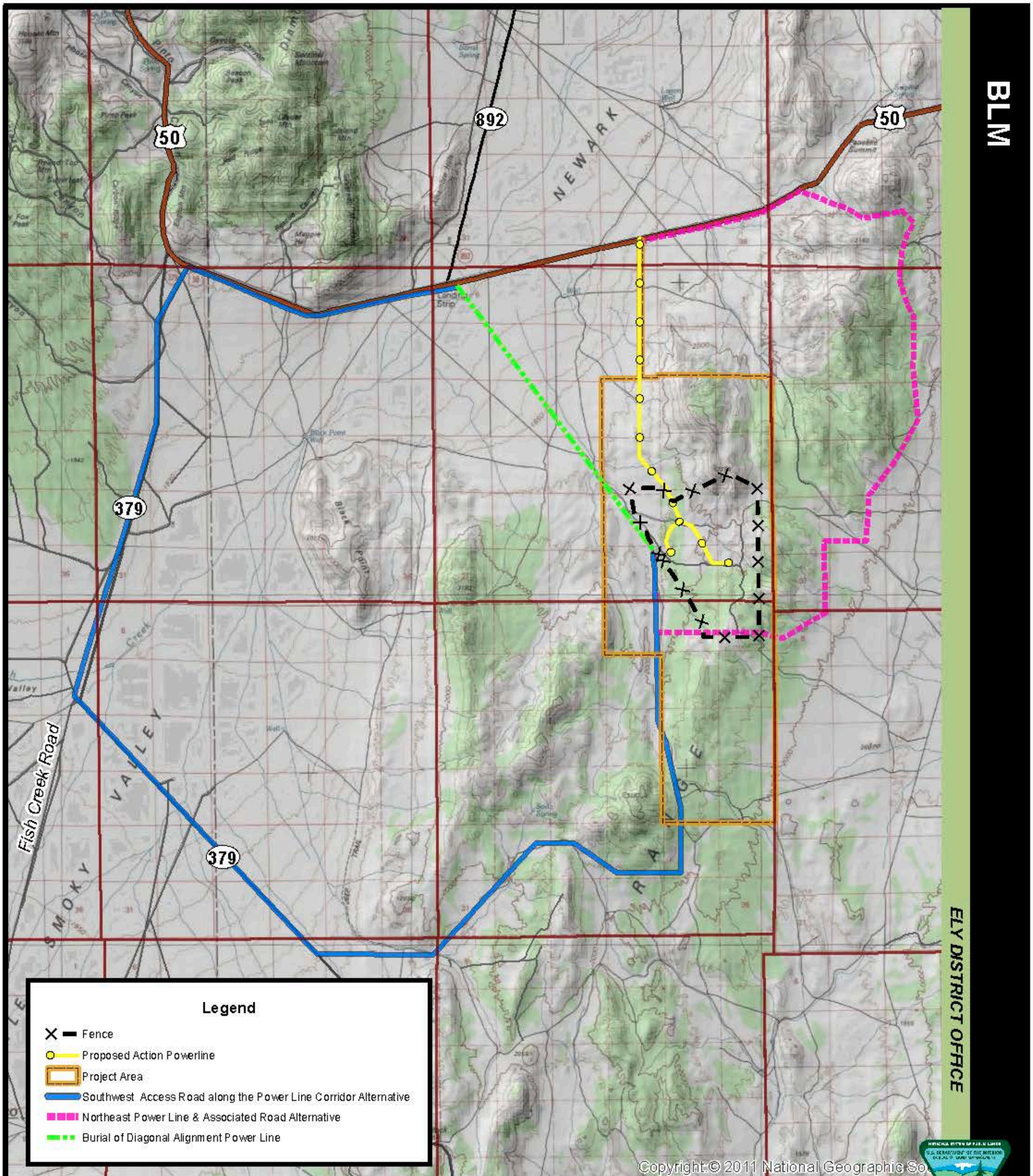

FIGURE 2.5-3
ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS
MIDWAY GOLD US, INC.
PAN PROJECT

SCALE: 1 in = 2.5 miles

DATE DRAWN: JAN. 4, 2013

Miles 0 1.25 2.5 5

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2.5.10 Southwest Access Road Along the Power Line ROW

To address concerns of potential impacts to sage-grouse from the Proposed Action access road, a Southwest Access Road along the Power Line ROW alternative was considered that would follow the same route as the Southwest Power Line alternative discussed above (Figure 2.5-3).

Leks are located directly northwest and north of the mine site. This alternative is marginally further away from the leks than the Proposed Action alignment and would be less visible than the Proposed Action.

The total length of this alternative is approximately 30 miles compared to approximately five miles for the Proposed Action access road. The cost to construct and maintain this alternative road would be significantly greater than the Proposed Action access road. The environmental effects due to traffic (potential accidents, air emissions, fuel consumption, collisions with wildlife, and potential for accidental spills) would also be greater for this alternative compared to the Proposed Action access road.

The length of this alternative as well as the terrain, which results in lower speeds, would increase employee travel to the mine site by an estimated one hour each way via commuting from Ely and an estimated 30 minutes each way via commuting from Eureka. However, it would decrease employee travel time to the mine site by an estimated 20 minutes each way via commuting from Duckwater. Adding a potential two hours to an employee’s work day poses potential safety issues contributing to increased worker fatigue and safety issues.

The additional commuting distance as well as employee recruitment, retention, productivity and safety may interfere with attracting a qualified workforce. Midway anticipates hiring an average of 155 employees.

This alternative would be technically feasible but would be clearly environmentally inferior to the Proposed Action access road for the above-described reasons.

2.5.11 Burial of Proposed Action Power Line

To address concerns of potential impacts to sage-grouse from the Proposed Action power line an alternative of burying the power line was considered. Overhead power lines pose potential risks to sage-grouse due to raptor perching or collisions with the structures or conductors during evening flights (Connelly et al., 2000a). This alternative would include burial of a 25 kV underground line as opposed to an overhead 69 kV line, due to the lack of local repair and maintenance support for an underground 69 kV line. Because of the high risk of maintenance problems due to accidental grounding in lightning storms, Mt. Wheeler Power has indicated they would not be willing to bury just parts of a transmission line. A system to protect the line from ground electrical fluxuations is available; however, not economically feasible. The 25 kV underground line would start at the junction of Strawberry Road and U.S. Highway 50, then east along U.S. Highway 50 to the mine access road, and south into the project area along the east side of the mine access road. The total length of this alternative is approximately 8.6 miles.

This alternative would be technically feasible, however, burying of the power line, construction, management, and maintenance of the power line would be economically infeasible and would not be environmentally reasonable.

2.5.12 Burial of Diagonal Alignment Power Line

To address concerns of potential impacts to sage-grouse from the Proposed Action power line a Burial of Diagonal Alignment Power Line alternative was considered. The shorter diagonal alignment would run from the junction of Strawberry Road and U.S. Highway 50 to the mine in a southeasterly direction (Figure 2.5-3). The total length of this alternative is approximately six miles. This alternative would avoid direct interference with the sage-grouse lek locations. However, there would be a temporary impact to surface resources as it would require junction boxes. These junction boxes would be approximately eight feet wide by six feet deep by four to six feet high and spaced approximately 800 feet apart with security fences around each junction box for access.

These facilities would present perching opportunities for sage-grouse predators much closer to the leks northwest of the mine than the Proposed Action power line.

According to Mt. Wheeler Power this alternative would be approximately 30 times more costly to build than the Proposed Action transmission line.

This alternative would be technically feasible; however, burying of the power line, construction, management, and maintenance of the power line would be economically infeasible and would not be environmentally reasonable.

2.6 Comparative Analysis of Alternatives

A comparison of the environmental impacts between the Proposed Action and the alternatives including the No Action Alternative was completed with a summary of the results provided in Table 2.6-1. The full discussion of environmental impacts for each resource is provided in Chapter 4.

Table 2.6-1 Comparison Summary of Impacts from the Proposed Action and Alternatives

Potential Impact	Proposed Action	Waste Rock Disposal Site Design Alternative	Southwest Power Line Alternative	No Action Alternative
Water Resources (Surface Water)				
Increase in sedimentation	Disturbance of 3,204 acres of land may increase sediment in ephemeral drainages. EPMs (Section 2.3.14) would minimize this impact.	Same as for Proposed Action, except 79 fewer acres would be disturbed .	The Southwest Power Line Alternative ROW follows several ephemeral stream channels between State Route 379 and the Proposed Action area. This has the potential to have a moderate impact on ephemeral streams within the ROW.	No impacts other than those previously authorized
Contamination from chemical spills or leaks	No seeps, springs, ponds, or perennial streams exist in the project area. The potential for hazardous or other wastes to spill and subsequently affect surface water quality would be minimized through implementation of the Spill Contingency and Emergency Response Plan (Midway, 2012).	Same as for Proposed Action.	Same as for Proposed Action.	No impacts other than those previously authorized.
Water Resources (Groundwater)				
Changes in groundwater quality	No seeps, springs, ponds, or perennial streams exist in the project area. Process ponds would be double-lined and would include a leak detection system. The heap leach pad would have an 80-mil HDPE liner over a compacted clay layer. Water quality would be monitored according to the Groundwater Monitoring Plan (Midway, 2012). Mining pits would not intersect the groundwater table.	Same as for Proposed Action.	Same as for Proposed Action.	No impacts other than those previously authorized.
Changes in availability of groundwater for other water rights holders	Midway has leased water rights from an existing water rights holder, and therefore would not substantially increase the water use in Newark Valley.	Same as for Proposed Action.	Same as for Proposed Action.	No impacts other than those previously authorized.
Contamination from chemical spills or leaks	The potential for hazardous or other wastes to spill and subsequently affect groundwater quality would be minimized through implementation of the Spill Contingency and Emergency Response Plan (Midway, 2012).	Same as for Proposed Action.	Same as for Proposed Action.	No impacts other than those previously authorized.

Potential Impact	Proposed Action	Waste Rock Disposal Site Design Alternative	Southwest Power Line Alternative	No Action Alternative
Geology and Minerals				
Ore extraction and waste rock placement	The Proposed Action would remove approximately 206 million tons of material.	Same as for Proposed Action, except the waste rock would be distributed differently.	Same as for Proposed Action.	No impacts other than those previously authorized.
Paleontological Resources				
Loss of paleontological resources	Invertebrate fossils in the geologic units that would be disturbed are likely to be found throughout the outcrop area of these formations in Central Nevada. No vertebrate or significant invertebrate fossils have been found on site in these geologic units	Same as for Proposed Action.	Same as for Proposed Action.	No impacts other than those previously authorized.
Soils				
Loss of productive topsoil in disturbed areas	Approximately 3,204 acres of soils representing 22 3rd Order NRCS soil map units and 23 2nd Order soil map units are associated with project disturbance. Approximately 3.5 million cubic yards of soil would be salvaged and used during reclamation.	Same as for Proposed Action, except 79 fewer acres would be disturbed.	Same as Proposed Action, with an additional 68 acres of soil disturbance.	No impacts other than those previously authorized.
Increased wind and water erosion	Environmental controls including EPMs for erosion and dust control would minimize impacts associated with erosion and off-site deposition.	Same as for Proposed Action, except 79 fewer acres would be disturbed .	Same as Proposed Action.	No impacts other than those previously authorized.
Contamination of soils from spills of chemicals during transportation, storage, and use	Continued adherence to chemical handling practices would minimize the risk of chemical spills. A Spill Contingency/Emergency Response Plan would be followed for notification and cleanup procedures.	Same as Proposed Action.	Same as Proposed Action.	No impacts other than those previously authorized.
Air Resources				
Impacts to air quality	The mining activity will result in a moderate increase in air emissions throughout the life of the project. A modeling analysis has determined that impacts are below all applicable air quality standards. Most of the emissions as a result of the Proposed Action will be from fugitive emissions from vehicular travel.	Same as Proposed Action.	Same as Proposed Action.	No impacts other than those previously authorized.

Potential Impact	Proposed Action	Waste Rock Disposal Site Design Alternative	Southwest Power Line Alternative	No Action Alternative
Vegetation Resources				
Removal of vegetation	Approximately 3,204 acres of vegetation would be removed during construction and operation of the Proposed Action. Of that, approximately 452 acres are not subject to reclamation. Reclamation of the remainder of the disturbed acreage would result in established suitable vegetation for post-mine use.	Same as Proposed Action, except 79 fewer acres would be disturbed.	Same as Proposed Action, with an additional 68 acres of vegetation disturbance.	No impacts other than those previously authorized.
Increased potential for establishment of noxious and non-native, invasive weeds	Removal of vegetation may allow non-native species to become established. Control of non-native species through EMPs would minimize this risk.	Same as Proposed Action, except 79 fewer acres would be disturbed.	Same as Proposed Action, with an additional 68 acres of vegetation disturbance.	No impacts other than those previously authorized.
Special status plants	Loss of habitat and individual sagebrush cholla species has the potential to occur as a result of the Proposed Action.	Same as Proposed Action, except 79 fewer acres would be disturbed.	Same as Proposed Action, with an additional 68 acres of vegetation disturbance.	No impacts other than those previously authorized.
Wildlife Resources				
Displacement from existing habitat	Noise disturbance and human activities associated with the Proposed Action may displace foraging and/or nesting golden eagles and other wildlife, including Sage Grouse. Mitigation measures designed to reduce impacts to golden eagles and Sage Grouse would be implemented.	Same as Proposed Action.	This Alternative would have a smaller impact on Sage Grouse, as it moves the power line further from two active leks. The impact to Golden Eagles would be greater because there are four additional nesting sites within a five-mile buffer of the Southwest Power Line. The impact to Burrowing Owls would also be greater due to the presence of two known nesting territories within the 400-foot ROW.	No impacts other than those previously authorized.
Mortality due to construction activities, additional power lines, and increased traffic	Slow-moving and/or underground-dwelling animals would likely be lost during construction activities. Small mammals would likely experience an increase in predation due to an increase in perching locations (power poles) for raptors. Avian collisions with power lines would increase. Increased traffic would increase the incidents of vehicle-wildlife collisions.	Same as Proposed Action, except 79 fewer acres would be disturbed.	Same as Proposed Action, with an additional 68 acres of vegetation disturbance.	No impacts other than those previously authorized.

Potential Impact	Proposed Action	Waste Rock Disposal Site Design Alternative	Southwest Power Line Alternative	No Action Alternative
Range Resources				
Loss of forage during construction and operation	Under the Proposed Action, approximately 3,204 acres (69 AUMs) of vegetation would be removed. Of that, approximately 452 acres (11.3 AUMs) are not subject to reclamation. Reclamation of the remaining 2,752 acres would result in established suitable vegetation for post-mine use.	Same as Proposed Action, except 79 fewer acres of forage would be lost.	Same as Proposed Action, except there is a loss of acres of 6.68 acres of forage in the Newark allotment and 17.6 acres in the Duckwater allotment.	No impacts other than those previously authorized.
Restricted Access	Under the Proposed Action, the use of approximately 3,204 acres will be restricted during the life of the mine (14 years). Of that, 452 acres is not subject to reclamation. Approximately 2,752 acres would be unrestricted again after reclamation.	Same as Proposed Action, except 79 fewer acres of disturbance.	Same as Proposed Action, with an additional 68 acres of disturbance.	No impacts other than those previously authorized.
Wild Horses				
Reduction in forage and displacement from habitat	Under the Proposed Action, 3,204 acres of vegetation and habitat would be lost. Of that, 452 acres is not subject to reclamation. Reclamation is planned for the remaining acreage, which would result in established vegetation and habitat suitable for post-mine use.	Same as Proposed Action, except 79 fewer acres vegetation and habitat loss.	Same as Proposed Action except an additional loss of 68 acres of vegetation and habitat. Long-term loss is the same as for the Proposed Action.	No impacts other than those previously authorized.
Vehicle collisions	Long-term potential for vehicular collisions due to increased vehicular traffic. These effects would be minimized through the use of EPMs.	Same as Proposed Action.	Same as Proposed Action.	No impacts other than those previously authorized.
Cultural Resources				
Historic or prehistoric site disturbance	Seventy-five NHRP-eligible cultural resource sites have been identified within the project area. Any of these that would be impacted, as well as any new sites or human remains discovered during construction or operations would be handled in accordance with the Programmatic Agreement.	Same as Proposed Action.	Cultural surveys along the Southwest Power Line Alternative have not been completed, however if this alternative is selected surveys would be conducted as per the PA.	No impacts other than those previously authorized.
Increased traffic and accessibility	Increased public access into the general area increases the potential for unauthorized artifact collection and vandalism at nearby sites which could result in indirect impacts.	Same as Proposed Action.	Same as Proposed Action.	No impacts other than those previously authorized.

Potential Impact	Proposed Action	Waste Rock Disposal Site Design Alternative	Southwest Power Line Alternative	No Action Alternative
Native American Religious and Traditional Values				
Native American Site Disturbance	None identified.	Same as Proposed Action.	Same as Proposed Action.	No impacts other than those previously authorized.
Land Use				
Increased traffic	The Proposed Action would result in a slight increase in traffic to and from the project site.	Same as Proposed Action.	Same as Proposed Action.	No impacts other than those previously authorized.
Restricted public access	Approximately 3,204 acres of land would be restricted from public access and use for recreation activities such as hunting, hiking, trapping, etc. as a result of the Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No impacts other than those previously authorized.
Visual Resources				
Conflicts with established BLM VRM objectives	Impacts from the Proposed Action would not conflict with VRM objectives.	Same as Proposed Action.	Same as Proposed Action.	No impacts other than those previously authorized.
Change in scenic quality of the existing landscape	Changes to the existing landscape would be minimal and are not expected to dominate the view.	Same as Proposed Action.	Same as Proposed Action.	
Recreation and Wilderness				
Conflicts with existing federal, state, and local recreation management plans and policies	Proposed Action would not conflict with any known existing federal, state, and local recreation management plans and policies.	Same as Proposed Action.	Same as Proposed Action.	No impacts other than those previously authorized.
Change in access to existing recreation opportunities or areas	Project area would not be accessible for recreational use for the life of the project. Impacts would be minor due to abundance of similar areas and opportunities nearby.	Same as Proposed Action.	Same as Proposed Action.	No impacts other than those previously authorized.
Change in levels of use of existing recreation areas	Changes in the level of use would be negligible because ample dispersed recreation opportunities are nearby and relatively few users would be displaced by closure of the project area.	Same as Proposed Action.	Same as Proposed Action.	No impacts other than those previously authorized.

Potential Impact	Proposed Action	Waste Rock Disposal Site Design Alternative	Southwest Power Line Alternative	No Action Alternative
Socioeconomics				
Employment and income	Unemployment would decrease and income would therefore increase. This may lead to an increase in revenues for local businesses.	Same as Proposed Action.	Impacts would be similar in scope but may be larger in magnitude than those for the Proposed Action.	No impacts other than those previously authorized.
Population and housing	Population would increase slightly (less than one percent), and available housing would decrease. Housing costs may increase as a result.	Same as Proposed Action.	Impacts would be similar in scope but may be larger in magnitude than those for the Proposed Action.	No impacts other than those previously authorized.
Infrastructure and community services	The Proposed Action is not expected to have an appreciable effect on infrastructure but may slightly increase calls to law enforcement and emergency services.	Same as Proposed Action.	Same as Proposed Action.	No impacts other than those previously authorized.
Environmental Justice				
Impact on minority or low-income populations	None identified.	Same as Proposed Action.	Same as Proposed Action.	No impacts other than those previously authorized.
Undue burden to children	None identified.	Same as Proposed Action.	Same as Proposed Action.	No impacts other than those previously authorized.
Hazardous and Solid Waste				
Accidental spills/releases during transportation to and from the project area	Chemical spills during transportation could occur but the probability of a spill is expected to be very low. The commercial transportation company would be responsible for first response and cleanup. Local and regional law enforcement and fire protection agencies also may be involved to secure the site and protect public safety.	Same as Proposed Action.	Same as Proposed Action.	No impacts other than those previously authorized.
Accidental spills/releases during storage or use on the project site	Some spills of chemicals and fuel could occur during operations. In the event of such a spill, the spill would be handled in accordance with the Spill Contingency Plan/Emergency Response Plan.	Same as Proposed Action.	Same as Proposed Action.	No impacts other than those previously authorized.