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Gold Rock Mine Project

Environmental Impact Statement
Volume 2 - Chapters 4 through 8 and Appendices

Final

Casefile N-91957

U.S. Department of the Interior
Bureau of Land Management
Ely District Office, Bristlecone Field Office
702 North Industrial Way
Ely, Nevada 89301

Cooperating Agencies:
Duckwater Shoshone Tribe
Eureka County
Nevada Department of Conservation and Natural Resources
Sagebrush Ecosystem Technical Team
Nevada Department of Wildlife
White Pine County

July 2018

BLM
Ely District - Bristlecone Field Office, Nevada

Mission Statement

It is the mission of the Bureau of Land Management (BLM), an agency of the Department of the Interior, to manage BLM-administered lands and resources in a manner that best serves the needs of the American people. Management is based upon the principles of multiple use and sustained yield while taking into account the long-term needs of future generations for renewable and nonrenewable resources.

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Cover photo taken by Maria Ryan, BLM, shows the Easy Junior Pit, which currently exists at the proposed site of the Gold Rock Mine Project.

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CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

4.1 IMPACT ASSESSMENT

This chapter describes the environmental consequences to the affected environment from the Proposed Action and the alternatives. The Proposed Action and Action Alternatives outlined in Chapter 2 may cause, directly or indirectly, changes in the human environment. This EIS assesses and analyzes these potential changes and discloses the effects to the decision-makers and public. This process of disclosure is one of the fundamental aims of NEPA. There are many concepts and terms used when describing impact assessment that may not be familiar to the average reader. The following sections attempt to clarify some of these concepts. As noted in Section 1.10.3, several resources were not analyzed in detail because they would not be affected by the Proposed Action (because they do not occur in the project area): floodplains; Waters of the U.S.; wilderness areas, wilderness study areas, national parks, national recreation areas, national wildlife refuges or ranges, or areas of critical environmental concern (ACECs); wild and scenic rivers; and lands with wilderness characteristics.

4.1.1 Impacts/Effects

The terms "effect" and "impact" are synonymous under NEPA. Effects may refer to adverse or beneficial ecological, aesthetic, historical, cultural, economic, social, or health-related phenomena that may be caused by the Proposed Action or Action Alternative (40 CFR 1508.8). Effects may be direct, indirect, or cumulative in nature. Cumulative effects are analyzed in Chapter 5.

4.1.2 Direct Effects

A direct effect, caused by the action, occurs at the same time and place as the action (40 CFR 1508.8(a)). Direct and indirect effects are described in combination under each affected resource.

4.1.3 Indirect Effects

Indirect effects are reasonably foreseeable effects, also caused by the action, that occur later in time or are removed in distance from the action (40 CFR 1508.8(b)). Direct and indirect effects are described in combination under each affected resource.

4.1.4 Significance

The word "significant" has a very particular meaning when used in a NEPA document (40 CFR 1508.27). Significance is defined by CEQ as a measure of the *intensity* and *context* of the effects of a major federal action on, or the importance of that action to, the human environment. Significance is a function of the beneficial and adverse effects of an action on the environment.

Intensity refers to the severity or level of magnitude of impact. Public health and safety, proximity to sensitive areas, level of controversy, unique risks, or potentially precedent-setting effects are all factors to be considered in determining intensity of effect. Context means that the effect(s) of an action must be analyzed within a framework, or within physical or conceptual limits. Resource disciplines; location, type, or size of area affected (e.g., local, regional, national); and affected interests are all elements of context that ultimately determine significance. Both long- and short-term effects are relevant.

4.1.5 Indicators

Impact indicators are the consistent currency used to determine change (and the intensity of change) in a resource. Working from an established existing condition (i.e., baseline conditions described in Chapter 3) this indicator would be used to predict or detect change in a resource related to causal effects of proposed actions.

4.1.6 Environmental Effect Categories

Environmental effect categories are presented to define context for each resource that is analyzed in this chapter, and to provide a common language when describing effects. The duration of an impact can be transient or temporary, short-term, or long-term. For this analysis, the following definitions are used:

- Transient or temporary effects: short-lived, for example during construction.
- Short-term effects: 13 or fewer years. The estimated conceptual timeline for the Gold Rock Mine Project is presented in Table 2.3-2 and includes 10 years of mining and concurrent reclamation, plus an additional 3 years of reclamation following the end of mining, for a total of 13 years.
- Long-term effects: greater than 13 years.

4.1.7 Additional Monitoring and Mitigation

If Applicant-Committed EPMs are anticipated to minimize but not eliminate impacts, the BLM may require additional monitoring measures to determine the level of impact and whether mitigation measures would be needed.

Mitigation measures are means to address environmental impacts that are applied in the impact analysis to reduce intensity of or eliminate the impacts. To be adequate and effective, CEQ rules (40 CFR 1508.20) require that mitigation measures fit into one of five categories:

1) Avoiding the impact altogether by not taking a certain action or parts of an action;
2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or
5) Compensating for the impact by replacing or providing substitute resources or environments.

The proponent, or applicant, has developed Applicant-Committed EPMs as part of the Proposed Action and alternatives presented in Chapter 2. Mitigation measures presented in this chapter would be applied in addition to the Applicant-Committed EPMs that the applicant has proposed. The mitigation measures identified in the following subsections are also summarized in Appendix 4A. Applicant-Committed EPMs, mitigation measures, and management decisions and required design features specific to Great Sage-Grouse are summarized in Appendix 1A.

4.2 WATER RESOURCES

4.2.1 Analysis Areas

The analysis area for all action alternatives includes the Newark Valley north of the Plan area to US 50 and Railroad Valley/Northern Part south of the Plan area approximately 15 miles to the Duckwater Shoshone Reservation. The analysis area for the No Action Alternative is the approved, amended 2011 Exploration Plan area.

4.2.2 Indicators

Project-related activities have the potential to impact the quantity or quality of water resources through short- and long-term surface disturbance, as well as groundwater withdrawals for mine use. The following indicators have been identified to evaluate potential project impacts on water resources, including their potential project-related cause:

- Changes in volume of surface water flows in drainages in or downgradient of the Plan area following precipitation events, presence or effectiveness of stormwater controls
- Changes in surface water chemistry
- Changes in groundwater pumping rates, flow rates, and volumes in wells in or near the Plan area related to construction or operation activities
- Changes in groundwater chemistry, draindown rates, water infiltration rates, perennial yield, appropriation, or consumption

4.2.3 Proposed Action (Alternative 1)

For the description of potential effects to water resources within the analysis area as a result of the Proposed Action (Alternative 1), the water resources associated with the project are categorized as either surface water or groundwater resources. Effects are also described by project phase (construction; operation, maintenance, and reclamation). The baseline surface water and groundwater resources potentially affected by the Proposed Action are described in detail in Section 3.2.

Construction

Surface Water

Stormwater runoff that would be contained in on-site sediment control basins would not discharge downstream in the existing drainage channels. As a result, stormwater flow out of the project area would be reduced slightly under the Proposed Action. No mapped springs or seeps are located in the Plan area. Potential impacts to the quantity of groundwater discharging at regional springs are addressed in the groundwater section. No wetlands have been identified within or in close proximity to the Plan area. The closest wetland is approximately 13 miles to the southeast of the southern Plan area boundary on and near the Duckwater Shoshone Reservation.

Potential effects to surface water quality within the analysis area during construction include increases in suspended sediment and turbidity in dry drainages because of increased erosion resulting from vegetation clearing, topsoil stockpiling, fugitive dust from construction vehicles and earth-moving activities, and general soil disturbance. Because surface water drainages in the Plan area are ephemeral, the potential increased erosion and subsequent deposition of sediment in dry drainages would occur during runoff from snow melt and rainstorms.

As described in detail in the Plan and its appendices, including the Stormwater Management Plan (Midway 2013a) summarized in section 2.3.10, Midway would install extensive stormwater controls such as drainage diversion ditches, sediment control basins, and straw bales, and implement other Applicant-Committed EPMs to divert stormwater and snow melt around disturbance areas and control the transportation of sediment. Whenever practical, Midway would reclaim disturbed surfaces concurrent with construction and operations. Planned reclamation strategies include contouring, covering with growth media, and seeding to hold soil in place during runoff (Midway 2013a). Midway would construct the facilities as zero discharge facilities; install secondary containment features; and implement Applicant-Committed EPMs, including the SPCC Plan that would be included in the application for the WPCP, and the Petroleum Contaminated Soil Management and Spill Contingency and Emergency Response plans that were included as appendices to the Plan (Midway 2013a). If a reportable spill or release were to occur and not be captured by stormwater controls, stormwater could transport chemicals downstream. Considering surface flow off the Plan area, the closest perennial surface water body downgradient of the Plan area is located 3.2 miles south of the Plan area (Figure 3.2-1).

No groundwater connection is believed to exist between the basin fill aquifer and any of the springs in the region. However, to address concerns about potential indirect impacts to the threatened Railroad Valley springfish, potential impacts to the quality of groundwater that could discharge as surface water at Big Bull, Big Warm Springs or Little Warm Springs were evaluated by considering routes of contamination and proposed control measures and response plans. In the absence of site-specific information, a hypothetical groundwater migration rate, or velocity, for impacted groundwater can be calculated using a hydrogeologic analysis based on Darcy's Law (Freeze and Cherry 1979). The analysis is described in detail below in the Operations, Maintenance, and Reclamation, Surface Water section.

Groundwater

Water for dust control, fire suppression and soil compaction use during construction would be obtained from the existing on-site water supply well. Figure 2.3-1 shows the location of the water supply well. This water would be stored in temporary tanks or ponds to fill water trucks that would transport the water to the place of use. The amount of water used during construction would be approximately the same amount as that used during operations so the environmental impact of groundwater withdrawal would be similar to that described below for operations.

Green Springs is believed to be a range front spring, sourced from the White Pine Mountains rather than from Easy Ridge or the Plan area. Big Bull Spring and the nearby unnamed spring are believed to be range front springs that are not connected to the intermediate and inter-basin groundwater flow systems. Big Warm Springs and Little Warm Springs are believed to be hydrothermal springs, sourced from a deeper aquifer that is not in connection with the groundwater related to Easy Ridge or the Plan area (Figure 3.2-1).

Based on available information, no groundwater connection exists between the basin fill aquifer in which the Easy Junior well is believed to be located and any of the springs in the region. Using a conservative approach, it is possible to assume that pumping from the Easy Junior well could impact the water quantities observed in the springs. Therefore, to further address concerns about potential indirect impacts to the threatened Railroad Valley springfish and spring resource users in the region, additional analysis was performed to assess the influence of the Easy Junior Well.

As part of the baseline water resources evaluation, pump tests were conducted at the Easy Junior water supply well in November 2014. The details of the testing methods and results are provided in the Midway Gold US Inc. Gold Rock Project Baseline Hydrogeology Report (Hatch 2015). The

primary objectives of the testing were to evaluate well yields, provide estimates of aquifer hydraulic parameters (hydraulic conductivity, storage), and evaluate the area of influence of the well. The aquifer parameters would be applied in future analytical well drawdown evaluations. The aquifer testing consisted of 3 tests (a step test and two constant-rate tests) using flow rates ranging from 600 gpm (968 afy) to 690 gpm (1,113 afy).

A leaky, two-aquifer method (Neuman and Witherspoon 1969) was selected to analyze the pumping test data from the Easy Junior well (Hatch 2015; Hydrogeologica 2016). For the purposes of impact evaluation, the testing provided two important conclusions:

- The evaluation of the results provided an estimated hydraulic conductivity value of the basin-fill aquifer of 1.3×10^{-1} feet/minute, with a storage coefficient value of 0.001;
- Drawdown in the pumping well was nearly 20 feet during the course of the tests; drawdown in the nearby observation well GRO-100 (approximately 87 feet to the southwest) was less than two feet. This observation would suggest that drawdown effects due to pumping at this well influence a relatively small area.

Because the Theis method (1935) is an appropriate tool for long-term drawdown predictions over a larger region, predictive analysis of potential impacts was performed using the Theis method to estimate expected drawdown and the distance from the Easy Junior well that the drawdown may be observed. The modeling applied a range of hydraulic parameters estimated from the aquifer testing performed on the Easy Junior well and from earlier regional estimates (Watt and Ponce 2007; Heilweil and Brooks 2011). These values were used to generate two scenarios (Hydrogeologica 2016): one scenario using Easy Junior well aquifer test values, and the other scenario using values published in literature. The modeling also included the following assumptions and design elements:

- The aquifer is unconfined, homogeneous, and isotropic of uniform thickness.
- The starting water table is horizontal.
- The aquifer is pumped at a constant rate.
- The pumping well penetrates the entire thickness of the aquifer and thus receives water by horizontal flow.
- Water is released instantaneously from storage with decline of hydraulic head.
- The analysis ignores wellbore storage and skin losses.
- A “no-flow” boundary was added 1 mile to the west of the well field to represent the edge of the Basin Fill as a conservative assumption to limit groundwater flow to the well field from the east.
- The flow rates and durations of pumping were 1,105 gpm (1,783 afy) for 1 year to represent the construction period, 1,200 gpm (1,936 afy) for 10 years to represent the active mining period, and 600 gpm (968 afy) for 3 years to represent continued heap leaching and reclamation period.
- The modeling was run forward beyond the end of the 14-year pumping period; while the maximum drawdown is expected towards the end of the pumping period, additional drawdown may be propagated beyond this period.
- Hydraulic conductivity values provide a range of expected values based on available literature published values and those calculated from the aquifer test.

The scenario design and results are shown in Table 4.2-1 and on Figure 4.2-1 (both adapted from Gold Rock Project Baseline Hydrogeology Addendum (Hydrogeologica 2016). The drawdown is predicted to recover quickly after pumping ceases. This drawdown is not expected to have any impact on registered groundwater users in the area. Impacts to the nearby Bull Springs and Green Springs are considered unlikely (Hydrogeologica 2016). In summary, the Theis analysis indicates that, based on the relatively low water demand, groundwater impacts are expected to be small and localized due to the high transmissivity. This conclusion is similar to the observations made during the actual testing of the Easy Junior well.

Table 4.2-1 Groundwater Level Impact Analysis Results

Description	Hydraulic conductivity (ft/min)	Trans-missivity (ft^2/min)	Storage Coefficient	Aquifer Thickness (ft)	Maximum aquifer drawdown adjacent to pumping well (ft)	10-ft Isopleth	5-ft Isopleth	1-ft Isopleth
Easy Junior Well Test Results	1.3×10^{-1}	40	0.001	300	12	approximately 8 feet in 11 years	approximately 1.9 miles in 11 years	approximately 66 miles in 12 years
Literature Values	2.8×10^{-3}	2	0.15	600	130	approximately 1.4 miles in 12 years	approximately 2.5 miles in 15 years	approximately 6.8 miles in 60 years.

Notes:
Columns have been shaded for ease in reading.
Sources: Hydrogeologica 2016

Regarding potential impacts to groundwater quality, the depth to groundwater beneath the mine area is more than 1,200 feet bgs and, therefore, is not anticipated to be encountered during proposed construction or exploratory drilling. The potential for hazardous materials or other wastes to spill and subsequently affect groundwater quality would be minimized or avoided through implementation of the Spill Contingency and Emergency Response Plan, which is included as Appendix I of the Plan (Midway 2013a). If a reportable spill or release were to occur and not be captured by secondary containment measures, any uncaptured chemicals could migrate vertically or horizontally. If chemicals migrated downward, the chemicals would have to travel greater than 1,200 feet bgs to reach groundwater underlying the Plan area. Based on best available fate-and-transport knowledge, any spilled or released chemicals would attenuate naturally across that vertical distance.

Midway would install groundwater monitoring wells and measure water levels and collect water quality samples from these wells quarterly during operations in accordance with an approved WPCP. The groundwater monitoring plan (Appendix B of the Plan) is summarized in section 2.3.12 Ancillary Facilities, Monitoring Wells. Sample results would indicate any impact to groundwater, and Midway could address the impact before the chemicals could impact surface water quality for the closest end user 7.5 miles away (see hydrogeologic analysis described below in the Operations, Maintenance, and Reclamation, Surface Water section).

Construction is expected to take approximately 1 year to complete. With implementation of the Applicant-Committed EPMs outlined in Section 2.3.10 and 2.3.17, any impacts to water resources that may result from the construction phase of the Proposed Action are expected to be short term.

Operation, Maintenance, and Reclamation

Operations and maintenance would begin simultaneously with construction and would have similar types of impacts to surface water and groundwater resources as during the construction phase.

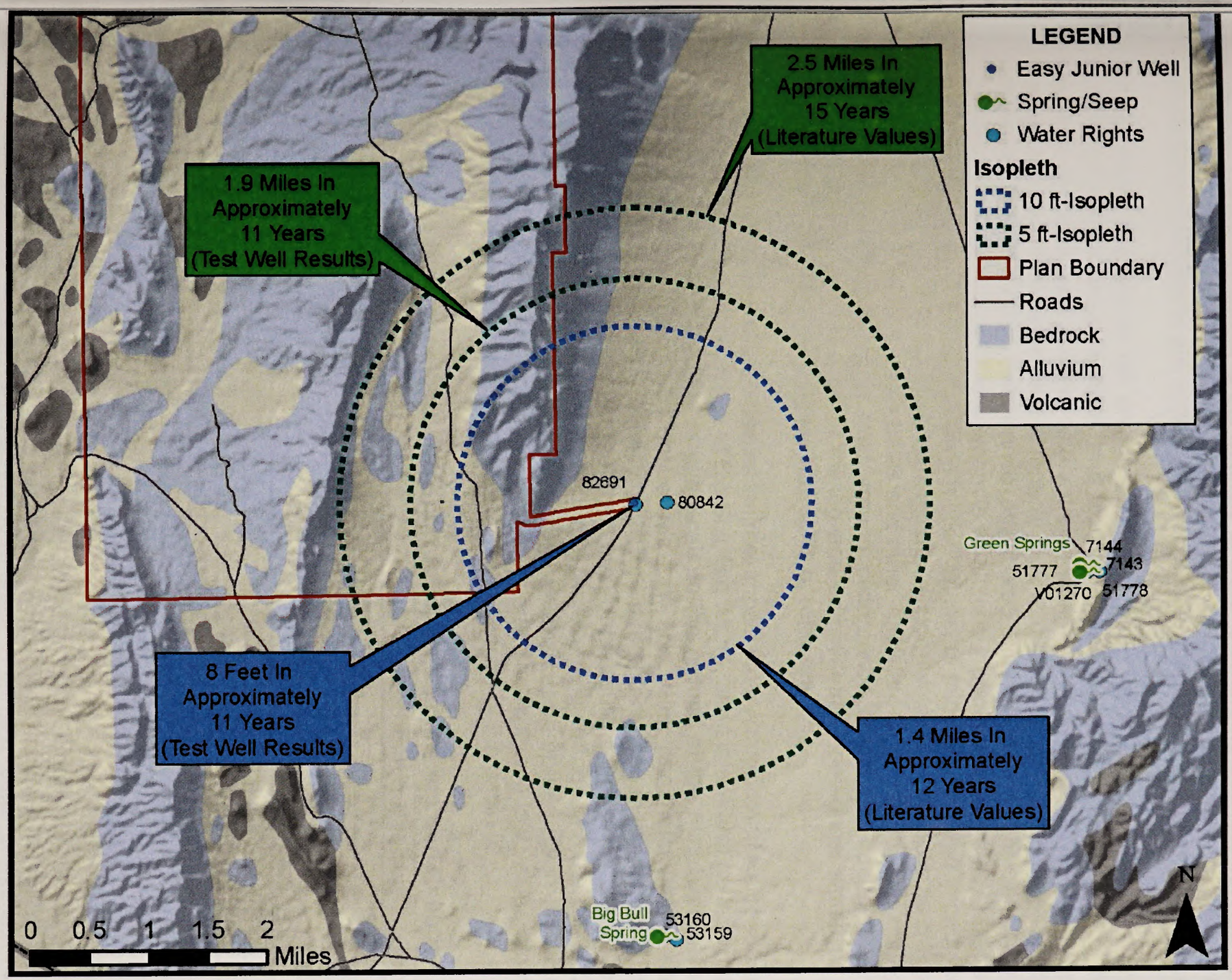
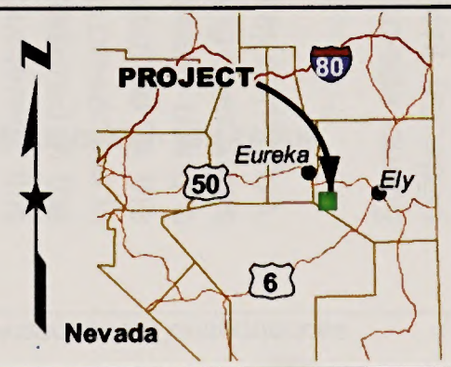


FIGURE 4.2-1
PREDICTED MAXIMUM EXTENT OF 10-FOOT AND 5-FOOT DRAWDOWN

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

ADAPTED FROM FIGURE A2 IN HYDROGEOLOGICA 2016.
ADAPTED ON: AUGUST 10, 2016.



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Basemap Source: ESRI World Shaded Relief Map Service

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Surface Water

Stormwater runoff containment in on-site sediment control basins would slightly reduce stormwater flow out of the project area. As described previously, there are mapped springs in the region. Potential impacts to the quantity of water discharging from the springs are addressed in the groundwater section. No wetlands have been identified within the analysis areas; therefore, no impacts to wetlands are anticipated during operations, maintenance, or reclamation.

Precipitation that would fall on the open pits, heap leach pad, and process ponds would be contained within those facilities and would not be discharged downstream of the mine area. Erosion and sediment delivery to dry drainages in the analysis area may increase as a result of vegetation removal; stockpiling of topsoil; fugitive dust from operations; potential mine-influenced drainage from WRDAs; disturbance associated with roads and other ancillary facilities; and general soil disturbance. These impacts would occur primarily during snow melt and stormwater runoff events. As noted for the construction phase, to minimize or avoid impacts to water quality Midway would construct or implement extensive stormwater controls such as drainage diversions, sediment control basins, straw bales and other Applicant-Committed EPMs during operations to divert stormwater and snow melt around disturbance areas and control sediment transport (Midway 2013a). A full staff of mining and administrative personnel would be on-site during operations to identify and address any spills or releases.

To address concerns about potential indirect impacts to the threatened Railroad Valley springfish, impacts to surface water quality at Big Bull, Big Warm, and Little Warm springs during operations due to an unintended release of chemicals to the ground at the mine were evaluated using a hydrogeologic analysis based on Darcy's Law and using parameter values described in the Baseline Hydrogeology Report (Hatch 2015). Parameters used in this analysis are presented in Table 4.2-2. It should be noted that the range of hydraulic conductivity values measured in the region vary by several orders of magnitude, representing a range of materials encountered. It is therefore assumed that the use of average values is appropriate given that various materials would be encountered over the distance traveled. The high and low values are not appropriate since no single material is representative of the entirety of the basin fill.

Table 4.2-2 Hydrogeologic Transport Analysis; Parameters and Results

	Arithmetic Average	Geometric Mean
Hydraulic Conductivity (ft/day)	31	4
Hydraulic Gradient (ft/ft)	0.02	0.02
Effective Porosity (--)	0.05	0.05
GW velocity (ft/day)	12.4	1.6
Distance to Big Bull Spring (miles)	7.5	7.5
GW Travel Time to Big Bull (years)	8.7	67.8
Distance to Big Warm and Little Warm Spring (miles)	12	12
GW Travel Time to Big and Little Warm (years)	14.0	108.5

Results are presented in Table 4.2-2. The analysis indicates that the groundwater migration rate between the Plan area and Big Bull Spring could be up to 12 feet per day, which means it would require approximately 9 years for groundwater containing chemicals to migrate from the Plan area to Big Bull Spring and impact the quality of water in surface water at this spring. Groundwater traveling to Big Warm and Little Warm springs would require approximately 14 years to migrate from the Plan area to Big Warm or Little Warm springs. Based on best available fate-and-transport knowledge, any spilled or released chemicals not captured by management plans or Applicant-

Committed EPMs would be unlikely to impact water quality in the springs because the uncaptured chemicals would naturally attenuate and no significant transport would occur over those horizontal distances.

The baseline hydrogeology report (Hatch 2015) describes the regional water balance, and the dominant component is evapotranspiration. Infiltration to the shallow subsurface is insignificant. Furthermore, baseline investigations (Hatch 2015; Ecosynthesis and WRC 2013) did not identify any perennial surface water or shallow groundwater systems in connection with regional aquifers that would allow for the transport of released chemicals. In addition, a full staff of mining and administrative personnel would be on-site during operations to identify and would address any spills or releases. Furthermore, deep monitoring well results would indicate any impact to groundwater quality, and Midway could address the impact before the chemicals could impact the closest end user 7.5 miles away.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Regarding water resources, following the natural drainage downstream of the TSF, the nearest mapped perennial surface water is located 7.4 miles southeast of the toe of the TSF on Bull Creek (Figure 3.2-1).

Groundwater

The NDWR has approved 26,402 afy of water rights in the Railroad Valley/Northern Part (NDWR 2014a). This amounts to about 35 percent of the perennial yield. The proposed mining project would involve withdrawal of approximately 2,000 afy, which is approximately 3 percent of the approved rights relative to perennial yield.

Potential impacts to groundwater quantity in the analysis area include lowering water levels or reducing volume available in existing groundwater resources or for groundwater users. The mapped springs in the vicinity of the Plan area are believed to be range-front springs with no connection to the basin fill aquifer (Section 3.2).

The results of the pump tests performed on the Easy Junior water supply well (Hatch 2015) are summarized above in Proposed Action, Construction, Groundwater. Predictive simulation results of potential groundwater impacts from pumping at Easy Junior well during construction, mining, and reclamation periods are presented in Table 4.2-1 and on Figure 4.2-1 (Hydrogeologica 2016).

The closest groundwater users are 7.5 miles away at Big Bull Spring, where water is used for irrigation and/or stock watering. This spring is a range front spring with no groundwater connection to the basin-fill aquifer (Section 3.2). However, if this spring is assumed to be in connection with the basin-fill aquifer, impacts would be unlikely based on the aquifer test and Theis analysis results. Nonetheless, to monitor for potential impacts to Big Bull Spring, if permission for access can be obtained, Midway would conduct monthly visual inspection and photographic documentation of flow conditions at the spring.

The threatened Railroad Valley springfish is found in Big Warm and Little Warm springs, located approximately 12 and 13 miles south, respectively. Big Warm and Little Warm springs are believed to be hydrothermal springs with no groundwater connection to the basin fill aquifer (Section 3.2). However, if these springs are assumed to be in connection with the basin-fill aquifer, impacts would be unlikely based on the aquifer test and Theis analysis results.

Midway would construct a number of operable facilities that either would use or could generate contaminants that could potentially impact groundwater if spilled in large enough quantities. Large scale functional areas and facilities that would be potential generators or emitters of contaminants

that could potentially impact soils and ultimately groundwater include: the mine pit, WRDAs, heap leach pad and TSF.

The proposed ultimate pit shell would be excavated to a depth of 5,740 feet amsl, which is more than 400 feet above the groundwater table. The Plan states that some rain water or snowmelt (meteoric water) may accumulate in the pit bottom; however, accumulation of stormwater has not been observed in the Easy Junior Pit (Hatch 2015). Diversion structures would be designed and constructed to keep stormwater runoff from entering the mine pit. The nature of the climate in the project area results in virtually all precipitation being evapotranspired; therefore the amount of water available to pond in the mine pit and infiltrate is very low. Although limited in volume, the meteoric water that could contact rock at the mine pit walls and pit floor may dissolve heavy metals or/and acidic ions from the rock into solution. This water may then migrate into the subsurface through natural and man-induced fractures in the rock. With a distance of more than 400 feet between the bottoms of the facilities and the groundwater table and the relatively low volume of meteoric water available for infiltration, this water is not likely to encounter groundwater and would not be considered a significant source of groundwater impact.

With a distance of more than 400 feet between the pit bottom and the groundwater table, the formation of a pit lake is unlikely. This distance of more than 400 vertical feet between the pit bottom and the underlying groundwater table significantly limits the potential for vertical migration of contaminants, thereby limiting impacts to groundwater. The potential transport of contaminants beneath the pit is expected to be limited because most precipitation is evaporated and the infiltration potential is low, and because metals and acidity would attenuate within the unsaturated zone through pH neutralization and metals adsorption.

Some types of waste rock have the potential to generate acid and/or leach heavy metals and other chemicals of concern. In terms of potential impacts, operations at the heap leach pad and TSF have the potential to release water containing contaminants that could leach through the ground and impact groundwater quality, if a major accident or failure of an engineered facility occurs. The extent to which such hypothetical releases of contaminants at these facilities would impact water quality in the Plan or analysis areas depends on a number of factors, including, among other things, the location, timing, and volume of the released contaminants; the nature of the chemicals and geochemistry of the released contaminants; the hydrogeologic and geochemical environment; the climate/weather at the time of release, and best design measures and management practices implemented to minimize or eliminate these releases.

As noted for the pit, a distance of more than 400 vertical feet between the bottom of these facilities and the underlying groundwater table significantly limits the potential for vertical migration of contaminants, thereby limiting impacts to groundwater. However, if water containing contaminants were to be released into the ground during operations, maintenance, or reclamation, appropriate actions would be taken to address the released contaminants in accordance with the Spill Contingency and Emergency Response Plan (Appendix I of the Plan) (Midway 2013a), and in accordance with federal, state, and local spill response regulations.

To minimize or avoid impacts to groundwater quality, Midway would obtain the appropriate permits (Table 1.9-1), including a WPCP. An application for a WPCP must contain detailed plans for the development of WRDAs, heap leach facilities, and TSF. These detailed plans would include monitoring of the waste rock for acid generation potential and the leaching of heavy metals and other contaminants of concern. The plans also would include monitoring of the heap leach pad for leak detection. The NDEP must approve these plans before an applicant can receive a WPCP, and would require any necessary measures to prevent adverse effects on groundwater. An example of a table of contents for a WPCP application is included as Appendix 1C.

Midway would construct the facilities as zero discharge facilities by lining the heap leach and tailings storage facilities and installing leak detection systems at these facilities; installing secondary containment features; constructing berms upgradient of facilities to prevent run-on; and installing other stormwater control measures. Midway would place soil covers on the heap, WRDAs, and TSF at closure, based on soil cover modeling results for the RAMS Easy Junior Mine, the nearby Pan Mine, and the Gold Rock Mine Project (CDM Federal Programs and CDM Constructors Inc. 2003; Dwyer Engineering 2012; Interralogic 2013c). Midway would implement Applicant-Committed EPMs; the SPCC, fluid monitoring and management and closure plans, and reporting programs that would be included in the application for the WPCP; the reclamation plan summarized in section 2.3.16 of this EIS and included in the Plan; and the Waste Rock Handling, Groundwater Monitoring, Petroleum Contaminated Soil Management, and Spill Contingency and Emergency Response plans appended to the Plan (Midway 2013a). In the event of a spill or release that was not properly controlled, Midway would comply with federal, state, and local spill response regulations.

To assess the potential impact to groundwater quality during the operations, maintenance, and reclamation phase of the Proposed Action, ABA accounting and metals leaching potential tests were performed on a variety of rock samples at the site (Interralogic 2013b). A total of 157 rock samples from the within or adjacent to the pit were analyzed using ABA methods. Of the 157 rock samples analyzed, 94 samples (approximately 60 percent) were found to be PAG based on Nevada BLM criteria for ABA. Eight waste rock samples were then placed in Humidity Cell Tests (HCTs). After 39 weeks of conducting these HCTs, only two of the eight samples were found to produce acidic water (Interralogic 2013b).

Meteoric Water Mobility Procedure (MWMP) testing was performed on 21 rock samples, with a majority of the samples from the anticipated dominant waste rock type, Chainman shale. The results indicated that the rock materials have generally low leaching potential for most constituents, with arsenic (in seven out of 21 samples) and thallium (in nine out of 21 samples) being most commonly observed at concentrations above the Nevada reference values of 0.01 mg/L and 0.002 mg/L, respectively. By rock type, shale samples exhibited the highest leached metal concentrations, with carbon-altered samples leaching the highest total recoverable arsenic concentrations. The results also suggested that the waste rock has the potential to leach metals under non-acid conditions (Interralogic 2013b).

As mentioned above, results of the geochemical analysis suggest that up to 60 percent of the waste rock may be categorized as PAG. This would suggest that up to 101,760,000 tons of PAG rock would result from mining operations. However, the analysis also identifies a significant portion of the PAG-designated waste rock as likely to be inert due to low total sulfur content (less than 1.5 percent). In comparison, the average neutralizing potential (NP) of the limestone and calcareous shales is high, approximately 210 tons of neutralizing potential per ton of calcium carbonate, or roughly 21 percent, due to the high percentage of limestone and calcareous shale present. The remaining 40 percent of the waste rock that is non-PAG has sufficient acid neutralizing characteristics and volume to encapsulate the PAG material.

As outlined in the *Draft Baseline Geochemistry and Waste Rock Handling Report, Gold Rock Project, Nevada* (Interralogic 2013b) (Appendix C of the Plan), the actual percentages and volumes would be determined during additional block modeling, ongoing testing, and operational sampling and on-site analysis during mining to determine whether there is a need to place the material in a PAG management area, or whether the material could be comingled with other non-PAG material for which no special handling is necessary. Data from the waste rock sampling program would be reviewed with the NDEP and BLM to determine if an adaptive management plan would be necessary to selectively place and isolate PAG material.

With regard to the existing Easy Junior WRDA, unless the water balance changes, for example unless more precipitation and/or infiltration occurs, or the hydraulic head within the Easy Junior WRDA increases, existing conditions would continue under the Proposed Action.

The available information indicates that some of the waste rock generated as a result of the Plan would have the potential to generate acidic water and water containing contaminants such as heavy metals that could leach through the ground and impact groundwater quality. Midway would implement design measures noted above, implement the waste rock handling plan appended to the Plan and comply with federal, state, and local spill response regulations. These measures would avoid or minimize the potential for impacts to groundwater quality.

Water Rights

As described above, the current perennial yield of the aquifer system in basin 173B, Railroad Valley/Northern Part is estimated by NDWR at 75,000 afy (NDWR 2014a). The NDWR has appropriated 26,402 afy of water rights in the Railroad Valley/Northern Part (NDWR 2014a). This amounts to approximately 35 percent of the perennial yield. As of June 30, 2015, 36 water rights applications were pending for the Railroad Valley/Northern Part Basin. These applications have been submitted by the Southern Nevada Water Authority and are ready for action, but have been protested (NDWR 2015a).

Midway applied for two permits to appropriate water from the Easy Junior well. Prior to NDWR's approval of Midway's permits, the Southern Nevada Water Authority had submitted a request that Midway's permits be considered, with temporal restrictions (SNWA 2014). On May 27, 2015, the NDWR approved applications 80842 and 82691 for a combined amount of 1,523.97 afy for mining, milling, and domestic uses at the Gold Rock Mine (NDWR 2015b,c,d). The appropriated water rights that Midway received are part of NDWR's existing appropriated water rights.

Depending on final design parameters, Midway estimates that it could use water at an average rate of approximately 1,200 gpm (Midway 2013a; Williams 2016). This rate equates to approximately 1,936 afy. If, upon commencement of construction or operation, Midway needs more than its allocated quantity of almost 1,524 afy, Midway would apply for additional water rights. Midway's proposed water use would represent approximately 7.6 percent of the existing appropriated water rights in the Railroad Valley/Northern Part and 2.7 percent of perennial yield. A sufficient amount of appropriated water is available in the Railroad Valley/Northern Part. Implementation of the Proposed Action would not impact other water users in the area.

The amount of water consumption necessary for the Proposed Action can be explained in terms of water consumption correlating to a certain stage of the project (i.e., construction, construction/initial operations, and general operating levels). Exploration would potentially consist of the lowest water consumption, and it is anticipated that only a few truckloads of water per day would be required for each drill site, plus the water necessary for dust control. The construction stage water usage is dependent on weather conditions during construction. Water usage during construction would be much higher than is required for the initial exploration stage. The construction stage would require water consumption for not only the continued exploration activities, but also dust control for roads and the increased traffic and construction activities. Water would be necessary for mixing concrete, soil conditioning and compaction purposes for construction of the leach pad base, building sites and roads. The construction phase would require approximately 1 year.

During late construction/initial operations, water usage would potentially reach the highest level due to the need to build the solution inventory, within the barren pond first, and then wet up the

heap and bring the heap leach process up to operating capacity. Exploration activities would continue during this stage as well as the necessary dust control measures.

Once the initial start-up is completed, mining operations and water consumption would drop to general operating levels, which would be slightly lower than construction/initial operations. The operations phase would occur over a ten year period.

4.2.4 Northern Power Line Route Alternative (Alternative 2)

Hydrologic impacts associated with this alternative during construction, operation, maintenance, and reclamation activities would be similar in type, intensity, and duration as those described under the Proposed Action. This alternative power line route would cross five fewer dry washes identified as intermittent or ephemeral in the NHD compared to the Proposed Action power line route.

4.2.5 Southern Power Line Route Alternative (Alternative 3)

Hydrologic impacts from other project facilities for construction, operation, maintenance, and reclamation activities would be similar in type, intensity, and duration as those described under the Proposed Action. This alternative power line route would cross four fewer dry washes identified as intermittent or ephemeral in the NHD compared to the Proposed Action power line route.

4.2.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

This alternative would involve additional road building and widening activities to establish an alternative main access route. The Northwest Main Access Route Alternative, Northern Power Line Route would result in similar types, intensity and duration of hydrologic impacts as described under the Proposed Action. The alternative power line route would cross five fewer dry washes identified as intermittent or ephemeral in the NHD compared to the Proposed Action power line route. The new connector road along the alternative access route would cross one additional dry wash identified as intermittent or ephemeral in the NHD compared to the Proposed Action.

4.2.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

This alternative would involve additional road building and widening activities to establish an alternative main access route. The Northwest Main Access Route Alternative, Southern Power Line Route would result in similar types, intensity and duration of hydrologic impacts as described under the Proposed Action. The alternative power line route would cross four fewer dry washes identified as intermittent or ephemeral in the NHD compared to the Proposed Action power line route. The new connector road along the alternative access route would cross one additional dry wash identified as intermittent or ephemeral in the NHD compared to the Proposed Action.

4.2.8 Modified County Road Re-Route Alternative (Alternative 6)

The Modified County Road Re-Route Alternative would result in similar types, intensity and duration of hydrologic impacts as described under the Proposed Action.

4.2.9 Western Tailings Storage Facility Alternative (Alternative 7)

This alternative would involve construction of the TSF in an area west of the heap and WRDAs, rather than south of the pit. Three smaller embankments would be constructed, compared to one larger embankment under the Proposed Action. This alternative TSF would be located in one

additional dry wash identified as intermittent or ephemeral in the NHD compared to the Proposed Action TSF.

Figures 3.2-3 and 3.2-4 indicate that, in the deeper regional carbonate aquifer, groundwater flows from the northeast to the project area and afterward flows south toward regional groundwater discharge areas. As noted in Section 3.2, shallow, perched, groundwater aquifers have not been found in the proposed mine area, despite the installation of more than 600 boreholes. Therefore, it is anticipated that no shallow groundwater would be encountered in the vicinity of the alternate TSF location. However, at least three proposed monitoring wells would be placed downgradient of the TSF (Figure 2.4-4), with final locations to be determined in coordination with NDEP during the development of the application for a WPCP. The wells would be placed such that if a leak were to occur from the mine facilities, water would report to these wells. If groundwater is found, it would be sampled and analyzed as described in the groundwater monitoring plan. If no groundwater is found, no sample would be taken.

The Western Tailings Storage Facility Alternative would result in similar types, intensity and duration of hydrologic impacts as described under the Proposed Action. If the Western TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Regarding water resources, following the natural drainage downstream of the TSF, the nearest mapped perennial surface water (a canal ditch) in the Duckwater Creek drainage is located approximately 36 linear miles southeast of the toe of the Western TSF.

4.2.10 No Action Alternative (Alternative 8)

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no associated project effects to water resources excluding the previously authorized exploration activities as described in Section 2.2. The exploration bore holes would be plugged and abandoned according to state regulations.

4.2.11 Preferred Alternative (Alternative 9)

The Preferred Alternative would involve additional road building and widening activities to establish an alternative main access route. This alternative would involve construction of the TSF in an area west of the heap and WRDAs, rather than south of the pit. Figures 3.2-3 and 3.2-4 indicate that, in the deeper regional carbonate aquifer, groundwater flows from the northeast to the project area and afterward flows south toward regional groundwater discharge areas. As noted in Section 3.2, shallow, perched, groundwater aquifers have not been found in the proposed mine area, despite the installation of more than 600 boreholes. Therefore, it is anticipated that no shallow groundwater would be encountered in the vicinity of the alternate TSF location. However, at least three proposed monitoring wells would be placed downgradient of the TSF (Figure 2.4-4), with final locations to be determined in coordination with NDEP during development of the application for a WPCP. The wells would be placed such that if a leak were to occur from the mine facilities, water would report to these wells. Monitoring would be conducted as summarized in Section 2.3 and as described in the groundwater monitoring plan appended to the Plan.

This alternative would result in similar types, intensity, and duration of hydrologic impacts as described under the Proposed Action. Under the Preferred Alternative, the Southern Power Line Route would cross four fewer dry washes identified as intermittent or ephemeral in the NHD compared to the Proposed Action power line route. The new connector road along the Northwest Main Access Route would cross one additional dry wash identified as intermittent or ephemeral in the NHD compared to

the Proposed Action. The Western TSF would be located in one additional dry wash identified as intermittent or ephemeral in the NHD compared to the Proposed Action TSF. In total, two more dry washes identified as intermittent or ephemeral would be crossed under this alternative compared to the Proposed Action.

If the Western TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Regarding water resources, following the natural drainage downstream of the TSF, the nearest mapped perennial surface water (a canal ditch) in the Duckwater Creek drainage is located approximately 36 linear miles southeast of the toe of the Western TSF.

4.2.12 Additional Monitoring and Mitigation

A groundwater monitoring plan is included as Appendix B in the Plan, and is summarized in section 2.3.12 of the EIS, in the subsection "Monitoring Wells". No additional monitoring is required. No mitigation is required.

4.3 GEOLOGY AND MINERALS

4.3.1 Analysis Areas

The Proposed Action analysis area includes:

- The Plan area and second water supply well and infrastructure including a 0.5-mile corridor (0.25-mile on each side of center line) for a 0.5-mile-long, 12-foot-wide two-track road, a 0.5-mile-long power line adjacent to the road, and a 150-foot by 150 foot well pad; for impact analysis purposes, specialists assumed that the proposed second well would be installed 0.5-mile south of the existing Easy Junior water supply well;
- A 200-foot-wide corridor (100 feet on each side of the center line) along the Proposed Action power line route to allow flexibility for field placement (Figure 1.1-2);
- 0.5-mile-wide corridors (0.25-mile on each side of the center line) for segments of the existing and new road on the proposed county road re-route to account for disturbance if, in the future, White Pine County decides to widen the road to meet BLM "resource road" standards (Figure 1.1-2).

The Northern Power Line Route Alternative analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of a 200-foot-wide corridor for the Northern Power Line Route Alternative, instead of a 200-foot-wide corridor along the Proposed Action power line route (Figure 2.4-1).

The Southern Power Line Route Alternative analysis area is similar to the Proposed Action analysis area with one modification:

- Inclusion of a 200-foot-wide corridor for the Southern Power Line Route Alternative, instead of a 200-foot-wide corridor along the Proposed Action power line route (Figure 2.4-1).

The Northwest Main Access Route Alternative, Northern Power Line Route analysis area is similar to the Proposed Action analysis area, with two modifications:

- Inclusion of a 200-foot-wide corridor for the Northern Power Line Route Alternative, instead of a 200-foot-wide corridor along the Proposed Action power line route (Figure 2.4-1);
- Inclusion of a 0.5-mile-wide corridor (0.25-mile on each side of the center line) along the Northwest Main Access Route (Figure 2.4-2)

The Northwest Main Access Route Alternative, Southern Power Line Route analysis area is similar to the Proposed Action analysis area, with two modifications:

- Inclusion of a 200-foot-wide corridor for the Southern Power Line Route Alternative instead of a 200-foot-wide corridor along the Proposed Action power line route (Figure 2.4-1);
- Inclusion of a 0.5-mile-wide corridor (0.25-mile on each side of the center line) along the Northwest Main Access Route Alternative (Figure 2.4-2)

The Modified County Road Re-Route Alternative analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of a 0.5-mile-wide corridor for an existing segment of BLM 4059 from BLM 4006/CR 1180 to the proposed county road re-route, instead of the 0.5-mile-wide corridors along the new BLM road segment and unmarked BLM road segment (Figure 2.4-2).

The analysis area for the Western Tailings Storage Facility Alternative (Figure 2.4-3) is the same as the Proposed Action analysis area.

The No Action Alternative analysis area is the approved, amended 2011 Exploration Plan area.

4.3.2 Indicators

Indicators used to assess potential impacts to geological resources include the following:

- Quantity of ore and waste rock material to be excavated;
- Number and types of mining claims, geothermal nominations, and oil and gas leases in the analysis area;
- Areas of surface disturbance; and
- Facilities to be constructed in areas of potential geotechnical instability.

4.3.3 Proposed Action (Alternative 1)

Under the Proposed Action, geology and minerals would be directly affected by the relocation and processing of gold ore-bearing materials and relocation of overburden/waste rock. An estimated total of 169.6 million tons of overburden would be excavated under the Proposed Action. In the context of total mineable rock within the analysis area, these impacts would be permanent and local. The summary of the basic design parameters and dimensions of the proposed pit is shown in Table 4.3-1.

Overburden would be relocated to the WRDAs. The North WRDA would store 83.4 million tons and the South WRDA would store 86.2 million tons. A summary of basic design parameters and dimensions for the proposed WRDAs is shown in Table 4.3-2.

Table 4.3-1 Pit Design Parameters and Dimensions

Open Pit	Slope (Degrees)	Length (feet)	Width (feet)	Area (acres)[1]	Maximum Depth (feet)	Pit Bottom Elevation (feet AMSL)
Gold Rock Pit	40-55	8,600	2,400	367	800 to 1,000	5,740

Notes:
1 During development of the proposed Gold Rock pit, Midway would expand the existing 33-acre Easy Junior pit, increasing the footprint by 334 acres, to an ultimate footprint of 367 acres.

Table 4.3-2 WRDA Design Parameters and Dimensions

WRDA	Width (feet)	Length (feet)	Reclaimed Slope (Degrees)	Height (feet)	Crest Elevation (feet AMSL)
North WRDA	2,800	4,800	18	380	6,790
South WRDA	2,700	5,200	18	380	6,790

The quantity of ore excavated over the life of the mine would vary somewhat with market conditions, but the heap leach pad would be designed for a capacity of approximately 77 million tons. The excavated ore would be crushed on-site and processed at the heap leach pad. Slurry consisting of processed ore tailings would be stored at the TSF and reclaimed in place at mine closure. Negligible volumes of overburden would be removed during construction of other facilities that require level footings.

Construction of other mine facilities, roads, and power lines would limit the accessibility of underlying minerals in those areas. These impacts would persist as long as the facilities are operated and maintained. Upon decommissioning and reclamation of particular features, these areas could be considered for future development of geologic or mineral resources. The mine pit could also be re-opened for exploration in the future if warranted by economic conditions or technological developments. The primary indicator for impacts to the accessibility of geologic or mineral resources is the total area of surface disturbance. Under the Proposed Action, approximately 3,946 acres of surface disturbance would occur. Some geologic and mineral resources would be inaccessible within the analysis area due to economic or technological limitations.

Geotechnical instability could occur in the form of slope failure or rockfall. With the exception of the existing Easy Junior pit, no areas of potential geotechnical instability are known to be present within the analysis area. Seismic activity has the potential to occur during the construction through reclamation phases at intensities that could affect slope stability. Movement of the pit wall along joints, fractures, faults, and other discontinuities could occur with or without seismic influence. Slope failure or rock fall within the pit could delay mining operations and represent a temporary impact to the availability of mineral resources. Similar effects could occur due to poor blasting control (over blasting) in the pit, which could also affect slopes adjacent to the pit. Slope instability outside of the pit would most likely affect roads and access to various mine facilities.

The Proposed Action power line route would span alluvium along parts of the route. Road cuts, grading, or blasting required to build the power line maintenance road and install the power poles could create minor slope instability. If rock cuts are required to construct the road, or if existing slopes are required to be undercut, sliding of the rock along joints similar to that described for the pit could also occur and damage equipment or affect traffic flow. Potential geotechnical impacts due to slides along the power line maintenance road would be short-term (lasting only until the road can be cleared or repaired).

Tailings storage facility dam and heap leach pad failure due to seismic activity or other unforeseeable circumstances could lead to a discharge of contaminated material to areas without containment and underlining. To minimize risk of a TSF failure, Midway would obtain the appropriate permits from NDEP and NDWR, and subsequently build, manage, and close the TSF in compliance with appropriate permits and regulations. Risk reduction measures are described in section 2.3.9 and noted in Table 2.3-8. Implementation of these measures would result in a very low probability of a failure.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Impacts could include short-term or long-term loss of access to mineral resources.

4.3.4 Northern Power Line Route Alternative (Alternative 2)

The types of direct and indirect effects to geologic and mineral resources under this alternative are expected to be the same as under the Proposed Action. The same amount of ore and overburden would be excavated, crushed, processed, and backfilled or used for cover material. Project facilities would have similar susceptibility to seismic and geotechnical hazards as under the Proposed Action. Construction of the Northern Power Line would involve 18 acres of disturbance compared to 51 acres of disturbance for the Proposed Action power line, which is 33 fewer acres of disturbance.

The Northern Power Line Route Alternative maintenance road would span alluvium along most of the route. Road cuts or grading required to build the road and install the power poles could create minor slope instability. If rock cuts are required to construct the road, or if existing slopes are required to be undercut, sliding of the rock along joints similar to that described for the pit under the Proposed Action could also occur and damage equipment or affect traffic flow. Potential geotechnical impacts due to slides along the power line maintenance road would be short-term (lasting only until the road can be cleared or repaired).

As under the Proposed Action, overall impacts to geologic and mineral resources would be permanent and local within the analysis area.

4.3.5 Southern Power Line Route Alternative (Alternative 3)

The types of direct and indirect effects to geologic and mineral resources under this alternative are expected to be the same as under the Proposed Action. The same amount of ore and overburden would be excavated, crushed, processed, and backfilled or used for cover material. No additional mining claims or geothermal nominations would be affected. Project facilities would have similar susceptibility to seismic and geotechnical hazards as under the Proposed Action. Construction of the Southern Power Line would involve 17 acres of disturbance compared to 51 acres of disturbance for the Proposed Action power line, which is 34 fewer acres of disturbance.

The Southern Power Line Route Alternative maintenance road would span alluvium along most of the route. Road cuts or grading required to build the road and install the power poles could create minor slope instability. If rock cuts are required to construct the road, or if existing slopes are required to be undercut, sliding of the rock similar to that described for the pit under the Proposed Action, could also occur and damage equipment or affect traffic flow. Because the Southern Power Line Route would generally follow existing BLM roads, the likelihood of these impacts to occur is low and anticipated geotechnical impacts would be short-term (lasting only until the road can be cleared or repaired). As under the Proposed Action, overall impacts to geologic and mineral resources would be permanent and local within the analysis area.

4.3.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

The types of direct and indirect effects to geologic and mineral resources under this alternative are expected to be similar in types, intensity and duration as those described under the Proposed Action. The same amount of ore and overburden would be excavated, crushed, processed, and backfilled or used for cover material. Project facilities would have similar susceptibility to seismic and geotechnical hazards as under the Proposed Action.

Construction of a power transmission line and maintenance road along the Northern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities. For this alternative, 64 more acres of surface disturbance would occur compared to the Proposed Action. This disturbance would be reclaimed. Impacts from long-term surface disturbance that would not be reclaimed would be similar to those described under the Proposed Action.

Power line and road construction would span alluvium along most of the route. Road cuts or grading required to build the road could create minor slope instability. If rock cuts are required to construct the road, or if existing slopes are required to be undercut, sliding of the rock similar to that described for the pit under the Proposed Action, could also occur and damage equipment or affect traffic flow. Potential geotechnical impacts due to slides along the power line maintenance road would be short-term (lasting only until the road can be cleared or repaired).

As under the Proposed Action, overall impacts to geologic and mineral resources would be permanent and local within the analysis area.

4.3.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

The direct and indirect effects to geologic and mineral resources under this alternative are expected to be similar in types, intensity and duration as those described under the Proposed Action. The same amount of ore and overburden would be excavated, crushed, processed, and backfilled or used for cover material. Project facilities would have similar susceptibility to seismic and geotechnical hazards as under the Proposed Action.

Construction of a power transmission line and maintenance road along the Southern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities. For this alternative, 72 more acres of surface disturbance would occur compared to the Proposed

Action. This disturbance would be reclaimed. Impacts from long-term surface disturbance that would not be reclaimed would be similar to those described under the Proposed Action.

Power line and road construction would span alluvium along most of the route. Road cuts or grading required to build the road could create minor slope instability. If rock cuts are required to construct the road, or if existing slopes are required to be undercut, sliding of the rock similar to that described for the pit under the Proposed Action, could also occur and damage equipment or affect traffic flow. With implementation of either power line option under this alternative, construction would primarily occur along existing roads.

As under the Proposed Action, overall impacts to geologic and mineral resources would be permanent and local within the analysis area.

4.3.8 Modified County Road Re-Route Alternative (Alternative 6)

The types of direct and indirect effects to geologic and mineral resources under this alternative are expected to be similar in types, intensity and duration as those described under the Proposed Action. The same amount of ore and overburden would be excavated, crushed, processed, and backfilled or used for cover material. Project facilities would have the same susceptibility to seismic and geotechnical hazards as under the Proposed Action. Under this alternative, 7 fewer acres would be disturbed by new road construction along the county road re-route. In the future, if White Pine County elects to upgrade the county road re-route, implementing this alternative would disturb 28 acres during road widening activities. In comparison, the Proposed Action would involve 29 acres of disturbance due to road construction and widening. Overall, this alternative could result in 1 less acre of long-term disturbance compared to the Proposed Action.

Road widening, if required for the Modified County Road Re-Route Alternative, would span alluvium along most of the route. Road cuts or grading required to widen the road could experience minor slope instability due to construction. If rock cuts are required to construct the road, or if existing slopes are required to be undercut, sliding of the rock similar to that described for the pit under the Proposed Action, could also occur and affect traffic flow or damage equipment. Potential geotechnical impacts due to slides along the widened modified county road re-route would be short-term (lasting only until the road can be cleared or repaired).

As under the Proposed Action, overall impacts to geologic and mineral resources would be permanent and local within the analysis area.

4.3.9 Western Tailings Storage Facility Alternative (Alternative 7)

The types of direct and indirect effects to geologic and mineral resources under this alternative are expected to be similar to the types, intensity and duration as those described under the Proposed Action. The same amount of ore and overburden would be excavated, crushed, processed, and backfilled or used for cover material. Project facilities would have the same susceptibility to seismic and geotechnical hazards as under the Proposed Action. The Western TSF footprint would cover 403 acres, compared to a 269-acre footprint for the Proposed Action TSF. Although the Western TSF footprint would be larger, this alternative would result in 118 fewer acres of total disturbance than the Proposed Action. Approximately 420 acres of disturbance would not be reclaimed, compared to 458 acres under the Proposed Action, resulting in 39 fewer acres that would not be reclaimed.

As under the Proposed Action, overall impacts to geologic and mineral resources would be permanent and local within the analysis area.

4.3.10 No Action Alternative (Alternative 8)

Current geologic and mineral resource trends within the analysis area would continue under the No Action Alternative. However, mineral development contemplated under Federal laws including the 1872 Mining Law would not occur. No direct or indirect impacts to geologic or mineral resources would occur as a result of implementation of the No Action Alternative.

4.3.11 Preferred Alternative (Alternative 9)

The types of direct and indirect effects to geologic and mineral resources under this alternative are expected to be similar to the types, intensity, and duration of those described under the Proposed Action. The same amount of ore and overburden would be excavated, crushed, processed, and backfilled or used for cover material. Project facilities would have the same susceptibility to seismic and geotechnical hazards as under the Proposed Action.

Construction of a power transmission line and maintenance road along the Southern Power Line Route would result in less surface disturbance compared to the Proposed Action. Construction of the Southern Power Line would primarily occur along existing roads. Several segments of existing roads that already support commercial truck traffic would make up part of the Northwest Main Access Route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities.

Under the Preferred Alternative, no new road construction would occur along the modified county road re-route, resulting in 7 fewer acres of surface disturbance compared to the Proposed Action. In the future, if White Pine County elects to upgrade the modified county road re-route, 28 additional acres would be disturbed during road widening activities. In comparison, the Proposed Action would involve 22 additional acres of disturbance due to road widening. Overall, this alternative could result in 1 less acre of long-term disturbance compared to the Proposed Action.

Power line installation and road construction or widening would span alluvium along most of the routes. Road cuts or grading required to construct or widen the road segments could be subject to minor slope instability due to construction. If rock cuts are required to construct the road segments, or if existing slopes are required to be undercut, sliding of the rock similar to that described for the pit under the Proposed Action could also occur and affect traffic flow or damage equipment. Potential geotechnical impacts due to slides along the constructed or widened road segments would be short-term (lasting only until the road can be cleared or repaired).

The Western TSF footprint would cover 403 acres, compared to a 269-acre footprint for the Proposed Action TSF. Although the Western TSF footprint would be larger, construction of the more compact facility layout would result in less total disturbance than the Proposed Action facility layout. Approximately 420 acres of disturbance would not be reclaimed, compared to 458 acres under the Proposed Action, resulting in 39 fewer acres that would not be reclaimed.

Overall, 45 fewer acres of surface disturbance would occur under this alternative when compared to the Proposed Action. As under the Proposed Action, overall impacts to geologic and mineral resources would be permanent and local within the analysis area.

4.3.12 Additional Monitoring and Mitigation

No additional monitoring is required. No mitigation measures are required.

4.4 PALEONTOLOGICAL RESOURCES

4.4.1 Analysis Areas

The analysis areas are the same as those used for geology and minerals (Section 4.3.1).

4.4.2 Indicators

The following indicators were considered when analyzing potential impacts to paleontology:

- Known paleontological resources;
- Proximity to geologic strata with potential to contain paleontological resources; and
- Depth of excavations associated with project components.

Potential direct effects to paleontological resources include destruction of a paleontological resource, or its contextual geologic setting. These impacts typically occur during ground disturbing activities when heavy equipment or vehicle tires contacts these resources. Paleontological resources can be indirectly affected by road development, which can increase accessibility to the resources on public lands. Increased access could lead to increased erosion rates and theft or destruction of fossil remains or destruction of their geological context.

Impacts to specific paleontological resources are not presented because scientifically significant paleontological resources have not been identified in the analysis area. In addition, paleontological resources are generally located by active discovery during surveys, by chance during man-made disturbances, by exposure due to erosion, or other means. Consequently, the analysis focused on the potential for scientifically significant resources to occur within specific rock units that the project would disturb because any fossils contained within these units cannot be discovered and identified until the rock is fragmented and excavated.

4.4.3 Proposed Action (Alternative 1)

Construction

Direct effects to paleontological resources such as destruction, damage or displacement could occur from the disturbance of rock during construction of the facilities, roads, or power lines. Rock units disturbed would be Quaternary sediments; Tertiary volcanics; Tertiary tuff deposits; Mississippian Diamond Peak Formation sandstone, siltstone and silty claystone; Mississippian Chainman shale; Joana limestone; Pilot shale; and Devonian Devils Gate limestone. Of these units, only the limestones are known to contain fossils; however, they have low potential to contain scientifically significant fossils (PFYC class 2). Most fossils within these units are invertebrate fossils that are commonly found in central Nevada. Consequently, they are not scientifically significant. No known occurrences of rare or sensitive fossils have been identified in these units in the analysis area.

Quaternary sediments and Tertiary sedimentary and volcanic rocks in the analysis area have been classified as having unknown potential (PFYC 3b) and could contain vertebrate fossils or scientifically significant invertebrate fossils. Surface disturbance would occur on approximately

1,048 acres (27 percent of all proposed surface disturbance) that overlay Quaternary alluvium and colluvium and approximately 14 acres (0.4 percent of all proposed surface disturbance) that overlay younger Tertiary sedimentary and volcanic rocks. However, no known scientifically significant paleontological resources are present within the analysis area.

No paleontological resources have been identified in the analysis area, and low potential exists for meaningful paleontological resources in the analysis area.

Midway would train its employees, contractors, and other related personnel regarding the environmental responsibilities required under the Plan. Paleontological resources of potential scientific interest encountered (including all vertebrate fossils and deposits of petrified wood) would be left intact and immediately brought to the attention of the BLM Authorized Officer (Table 2.3-8). Fossils determined to be scientifically significant would be excavated and curated, adding to the scientific database; this would be an indirect long-term beneficial impact.

Public access to areas underlain by geologic units that potentially bear scientifically significant fossils is not expected to increase notably because existing roads would provide the primary access to the mine. In addition, the area lacks outcrops and the general nature of the geologic units is flat. Consequently, fossil collection is not expected to increase.

Operations, Maintenance, and Reclamation

The type and intensity of direct impacts to paleontological resources from disturbance of the ore and waste rock during exploration activities, mining of the pit, or operation and maintenance of mine facilities are expected to be similar to those expected to occur during construction. If paleontological resources of scientific interest are encountered, Midway would leave them intact and bring them to the attention of the BLM Authorized Officer (Table 2.3-8). As described for construction activities, although long-term operations, maintenance, and reclamation activities would increase overall access to the area, fossil collection is not expected to increase due to the lack of good areas for casual fossil collection.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Impacts could include short-term or long-term loss of access to paleontological resources.

4.4.4 Northern Power Line Route Alternative (Alternative 2)

The types of direct and indirect effects to fossils and their geologic context under this alternative would be similar in types, intensity and duration to those for the Proposed Action. Compared to the Proposed Action, surface disturbance along the northern power line route alternative would occur on approximately 33 fewer acres, including approximately 11 fewer acres that overlay PFYC Class 3b units.

4.4.5 Southern Power Line Route Alternative (Alternative 3)

The types of direct and indirect effects to fossils and their geologic context under this alternative would be similar in types, intensity and duration to those for the Proposed Action. Compared to the Proposed Action, surface disturbance along the southern power line route alternative would occur on approximately 34 fewer acres, including approximately 11 fewer acres that overlay PFYC Class 3b units.

4.4.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

The types of direct and indirect effects to fossils and their geologic context under this alternative would be similar in types, intensity and duration to those for the Proposed Action. Paleozoic bedrock units encountered along the northwestern flank of the Pancake Range would be similar to those within the Plan area. Surface disturbances along the Pan Mine Southwest Power Line Route maintenance road would occur on 46 more acres than the Proposed Action, including approximately 46 more acres that overlay PFYC 3b units.

4.4.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

The types of direct and indirect effects to fossils and their geologic context under this alternative would be similar in types, intensity and duration to those for the Proposed Action. Paleozoic bedrock units encountered along the northwestern flank of the Pancake Range would be similar to those within the Plan area. Surface disturbances along the Pan Mine Southwest Power Line Route maintenance road would occur on approximately 49 more acres than the Proposed Action, including approximately 48 more acres that overlay PFYC 3b units.

4.4.8 Modified County Road Re-Route Alternative (Alternative 6)

The types of direct and indirect effects to fossils and their geologic context under this alternative would be similar in types, intensity and duration to those for the Proposed Action. Construction and maintenance of the Modified County Road Re-route would disturb a similar number of acres that overlay PFYC 3b units as the proposed county road re-route under the Proposed Action.

4.4.9 Western Tailings Storage Facility Alternative (Alternative 7)

The types of direct and indirect effects to fossils and their geologic context under this alternative would be similar in types, intensity and duration to those for the Proposed Action. Implementing this alternative would result in approximately 118 fewer acres of surface disturbance than the Proposed Action. Compared to the Proposed Action, approximately 236 fewer acres that overlay PFYC Class 3b geologic units would be disturbed. Although the disturbance area that overlays PFYC Class 3 geologic units would decrease compared to the Proposed Action, approximately 143 more acres that overlay younger sedimentary and volcanic rocks (unit Tys) would be disturbed, increasing the potential for direct impact to older (Miocene and Pliocene) fossils, which are known to be present in this unit elsewhere in White Pine County (UCMP 2013b). Compared to the Proposed Action, this alternative would have a higher potential to impact older fossils within Miocene and Pliocene deposits (unit Tys), but a lower overall potential for adverse impacts to scientifically significant paleontological resources, given the smaller surface disturbance footprint.

4.4.10 No Action Alternative (Alternative 8)

No known scientifically significant fossil resources are present within the analysis area.

4.4.11 Preferred Alternative (Alternative 9)

The direct and indirect effects to fossils and their geologic context under this alternative would be similar in types, intensity, and duration of those for the Proposed Action. Along the Northwest Main Access Route, paleozoic bedrock units encountered along the northwestern flank of the Pancake Range would be similar to those within the Plan area. Surface disturbances along the

Pan Mine Southwest Power Line Route maintenance road would occur on approximately 48 more acres that overlay PFYC 3b units compared to disturbance under the Proposed Action.

Construction and maintenance of the Modified County Road Re-route would disturb a similar number of acres that overlay PFYC 3b units than the proposed county road re-route under the Proposed Action.

Compared to the Proposed Action TSF, approximately 236 fewer acres that overlay PFYC Class 3b geologic units would be disturbed during construction of the facility layout associated with the Western Tailings Storage Facility. Although the disturbance area that overlays PFYC Class 3 geologic units would decrease compared to the Proposed Action, approximately 143 more acres that overlay younger sedimentary and volcanic rocks (unit Tys) would be disturbed, increasing the potential for direct impact to older (Miocene and Pliocene) fossils, which are known to be present in this unit elsewhere in White Pine County (UCMP 2013b). Compared to construction of the Proposed Action TSF, construction of the Western TSF would have a higher potential to impact older fossils within Miocene and Pliocene deposits (unit Tys), but a lower overall potential for adverse impacts to scientifically significant paleontological resources, given the smaller surface disturbance footprint.

Overall, approximately 188 fewer acres of PFYC Class 3 geologic units would be disturbed under the Preferred Alternative. Although 143 more acres of Tys geologic units would be disturbed during construction of the Western TSF, the smaller footprint of the Western TSF would result in a lower overall potential to adversely impact scientifically significant paleontological resources when compared to the Proposed Action.

4.4.12 Additional Monitoring and Mitigation

No additional monitoring measures are required. No mitigation measures are required.

4.5 SOILS

4.5.1 Analysis Areas

The Proposed Action analysis area occurs within:

- The Plan area and second water supply well and infrastructure, including a 150-foot by 150-foot well pad; a 0.5-mile-long, 12-foot-wide two-track road; and a 0.5-mile-long, power line with a 100-foot pole spacing and a 50-foot-radius circle of disturbance for each pole to allow for monopoles or two pole structures; for impact analysis purposes, specialists assumed that the proposed second well would be installed 0.5-mile south of the existing Easy Junior water supply well;
- A 200-foot-wide corridor along the Proposed Action power line route to account for varying field conditions and allow flexibility during final siting of the line (Figure 1.1-2);
- Corridors along segments of the existing and new road on the proposed county road re-route to account for disturbance if, in the future, White Pine County decides to widen the road; 30-foot-wide corridors to meet BLM “resource road” standards were used for analysis purposes (Figure 1.1-2);
- A 0.5-mile-wide buffer (0.25 mile on each side of center line) along the main access route (Figure 1.1-2); and
- The running surfaces of other existing roads that lead to the Plan area (Figure 1.1-2).

The Northern Power Line Route Alternative analysis area is similar to the Proposed Action analysis area with one modification:

- Inclusion of a 200-foot-wide corridor along the Northern Power Line Route Alternative, instead of a 200-foot-wide corridor along the Proposed Action power line route (Figure 2.4-1).

The Southern Power Line Route Alternative analysis area is similar to the Proposed Action analysis area with one modification:

- Inclusion of a 200-foot-wide corridor along the Southern Power Line Route Alternative, instead of a 200-foot-wide corridor along the Proposed Action power line route (Figure 2.4-1).

The Northwest Main Access Route Alternative, Northern Power Line Route analysis area is similar to the Proposed Action analysis area with three modifications:

- Inclusion of the Northern Power Line Route Alternative, instead of the Proposed Action power line route (Figure 2.4-1);
- Inclusion of a 0.5-mile-wide buffer (0.25 mile on each side of center line) along the Northwest Main Access Route (Figure 2.4-2);
- Inclusion of the running surface of Green Springs Road from US 50 and BLM 1179/CR 1204 instead of a 0.5-mile corridor along main access route.

The Northwest Main Access Route Alternative, Southern Power Line Route analysis area is similar to the Proposed Action analysis area with three modifications:

- Inclusion of the Southern Power Line Route Alternative, instead of the Proposed Action power line route (Figure 2.4-1);
- Inclusion of a 0.5-mile-wide buffer (0.25 mile on each side of center line) along the Northwest Main Access Route (Figure 2.4-2);
- Inclusion of the running surface of Green Springs Road from US 50 and BLM 1179/CR 1204 instead of a 0.5-mile corridor along main access route.

The Modified County Road Re-Route Alternative analysis area is similar to the Proposed Action analysis area with one modification:

- Inclusion of a 30-foot-wide corridor along existing BLM 4059 from BLM 4006/CR 1180 to the proposed county road re-route, instead of the 30-foot-wide corridors along the new BLM road segment and unmarked BLM road segment (Figure 2.4-3).

The Western Tailings Storage Facility Alternative analysis area is the same as the Proposed Action analysis area.

The No Action Alternative analysis area is the approved, amended 2011 Exploration Plan area.

4.5.2 Indicators

Indicators used to assess potential impacts to soil resources, including prime farmlands, include the following:

- Acres of soil disturbance and acres to be reclaimed; and
- Suitability of topsoil resources (growth media) for reclamation.

4.5.3 Proposed Action (Alternative 1)

The types of anticipated impacts to soil resources include increased wind and water erosion, soil compaction, potential decreased soil productivity in disturbed areas, and potential contamination of soils from spills of chemicals during transportation, storage, and use. These impacts are expected to result from various activities as described below. Some impacts are anticipated to be partially offset by the salvage of topsoil resources which would be stockpiled for use as reclamation materials (growth media).

The proposed Project would create approximately 3,946 acres of surface disturbance under the Proposed Action. Indirect impacts to soils are not expected to occur under the Proposed Action. Indirect impacts to other resources, including air quality and surface waters could occur as a result of soil disturbances during all phases of the Proposed Action. Wind erosion could affect air quality and result in deposition of sediment in surface waters. Sediment transport and sedimentation in downgradient streams would be minimized by use of stormwater diversions and sediment retention basins.

Construction

Construction activities, including salvage and stockpiling of topsoil, are expected to directly impact soil resources, primarily through heavy equipment and vehicle operation. Soil compaction during these activities can contribute to soil erosion and reduced soil productivity. Compaction can affect soil productivity by decreasing soil permeability, reducing water storage capacity, damaging microbiotic crusts and other soil microorganisms, increasing bulk density, and increasing precipitation runoff and erosion potential. Section 4.5.12 describes mitigation regarding soil compactlon, including a mitigation measure (loosening compacted surface soils), its effectiveness, and effects on other resources.

As summarized in Table 3.5-1, NRCS soil interpretations indicate that soils within the proposed areas of disturbance generally have severe erosion hazards once the existing vegetative cover is removed due to a combination of slope and erodibility. Similarly, excavation, transport, and stockpiling of growth media could also break down soil aggregates, increasing the likelihood for erosion while stockpiled and prior to establishment of vegetation during reclamation efforts. Interim seeding of growth media stockpiles is expected to decrease the potential for erosion at these locations. Additionally, the stockpiles would be protected from run-on and runoff until final placement by stormwater diversions. Wind erosion could also occur on disturbed areas or during material handling.

Dust abatement measures may include use of magnesium chloride or lignin sulfonate. The impacts to soils due to use of these compounds is still being researched. Results of a study in north-central Colorado indicated that there were accumulated concentrations of magnesium and chloride in roadside soils. Effects were confined to an area within approximately 20 feet (6 meters) from the edge of treated roads but extended farther (up to approximately 330 feet or 98 meters) in areas that receive runoff drainage. Downward mobility of chloride and magnesium ions

generally prevented a lack of accumulation of these ions in upper soil profiles (Jacobi et al 2009). Based on this information, project-related impacts to soils would be short-term and limited in extent to the areas immediately adjacent to treated roads and areas of road drainage.

Overall impacts to soil resources as a result of Proposed Action construction activities (soil salvage and facility construction) are anticipated to be long-term.

Operations, Maintenance, and Reclamation

The type and intensity of impacts to soil resources during operation and maintenance of mine facilities are expected to be similar to those expected to occur during construction. As described below, reclamation activities are expected to mitigate further impacts to soil resources but some impacts are still expected to occur.

Soils within the analysis area are generally poorly suited for reclamation purposes. However, many soils do currently support vegetation and likely have organic matter content favorable to reclamation. Because high quality topsoil is essentially absent within the analysis area, Midway plans to salvage approximately the top one foot of soil from disturbance areas for reclamation material. As a result, approximately 3,368,000 cubic yards of growth media are available for reclamation purposes (Table 2.3-5). Midway would salvage this material from 2,410 acres of mine facility footprints. This volume is adequate to cover the 3,455 acres of facilities (existing plus new disturbances) that would be reclaimed to a minimum depth of 6 inches. This is expected to provide suitable depth to achieve adequate and uniform coverage for seedbed preparation and reclamation. The Gold Rock Pit would not be reclaimed and therefore would not receive growth media.

Surface soils in the Plan area represent a source of seed and plant propagules and microorganism inoculums. Seeds and microbial inoculums are typically contained in the upper 8 inches of growth media. Root propagules are typically found within the top 2 feet of the soil profile. Stockpiling of these materials significantly reduces their viability over time. Therefore, direct placement (live-handling) of these soil components onto surfaces that have been prepared for reclamation is the most efficient post-disturbance use of this resource. The volume of soils to be direct placed as growth media would be determined at the time of salvage.

Mixing of salvaged soils during excavation, transport, storage, and redistribution is expected. The quality of these mixed salvaged soils would be similar to the pre-disturbance quality, as most soils within disturbance areas are similar in texture. Based on fuel availability and loading calculations presented in section 4.11, up to approximately 940 tons of available fuel wood, including live foliage and dead wood, would be salvaged and added to growth media stockpiles. Some of this salvaged woody material would be chipped and added to growth media stockpiles. Existing herbaceous vegetation could be incorporated into growth media during stripping. Incorporating existing woody and herbaceous material into salvaged soils would improve soil quality by increasing the organic matter content of soils (Eldridge et al. 2012). Where wood chips are added, soil moisture (water holding capacity) would increase and potential for erosion would decrease (Therrell et al. 2006). Increasing water holding capacity would help to offset droughtiness, which is one of the main limiting reclamation factors.

Upon placement of growth media for reclamation, soils would begin to revert to more natural conditions. Due to the inclusion of salvaged woody material, the quality of reclaimed soils with respect to vegetation establishment is expected to be similar or better than pre-salvage quality. However, natural soil structures and microbiotic crusts that are present in native soils would be destroyed and reclaimed soils would be more susceptible to erosion until vegetation is established. Vegetation rooting is likely to be limited beyond the reclaimed soils due to

compaction of underlying subsoils during construction, operation, and reclamation activities. Infiltration of precipitation beneath the reclaimed soils due to the presence of a less-permeable horizon may increase the availability of water within reclaimed soils for vegetation but may also promote soil saturation and surface runoff during high precipitation events.

Over the long-term, continued soil development and vegetation growth would reduce soil loss due to erosion, increase infiltration rates, increase water-holding capacity, increase organic content, and development of soil structures and microbiotic crusts.

Direct impacts to soils from the release of mill reagents, leach solutions, fuels, and other chemicals could occur during transportation, loading, and fueling activities but would be limited during storage by use of secondary containment systems. Impacts from chemical releases would be minimized by spill response procedures and are expected to be short-term.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Increased erosion, or long-term compaction or reduced soil productivity could occur.

Overall impacts to soils during operations, maintenance, and reclamation would be long-term. Approximately 3,950 acres would be disturbed; of that acreage, approximately 3,490 acres would be reclaimed concurrently and immediately following the end of mining operations. Several proposed facilities would not be reclaimed, including the expanded pit, one processing pond, the stormwater control facilities, sediment basins, and county road re-route (Figure 2.3-15), resulting in a long-term impact to 458 acres of site soils. Of the 458 acres that would not be reclaimed, 334 acres disturbed during expansion of the pit would be permanently lost, as bare rock would be exposed. The remaining 124 acres that would not be reclaimed would revegetate through natural processes.

4.5.4 Northern Power Line Route Alternative (Alternative 2)

The types, intensity and duration of direct and indirect effects to soils under this alternative are expected to be similar to those described under the Proposed Action but would occur over a smaller area (Figure 2.4-1). Surface disturbances along the northern power line route would directly affect approximately 33 fewer acres of soils than along the Proposed Action power line route. Impacts to soils under this alternative would be long-term. Other components (facility construction, operation, maintenance, and reclamation) would be the same as under the Proposed Action and would therefore create similar impacts.

Overall, compared to the Proposed Action, this alternative would create fewer impacts to soils. Surface disturbance would be approximately 1 percent less than the total disturbance under the Proposed Action. However, overall impacts during construction, operations, maintenance, and reclamation would still be long-term. As under the Proposed Action, the approximately 458 acres that would not be reclaimed would represent a long-term impact to soils within the analysis area.

4.5.5 Southern Power Line Route Alternative (Alternative 3)

The types, intensity and duration of direct and indirect effects to soils under this alternative are expected to be the similar to those described under the Proposed Action but would occur over a smaller area (Figure 2.4-1). Surface disturbances along the southern power line route would directly affect soils on approximately 34 fewer acres than along the Proposed Action power line route. Impacts to soils under this alternative would be long-term. Facility construction, operation, maintenance, and reclamation would be the same as under the Proposed Action and would therefore create similar impacts.

Overall, compared to the Proposed Action, this alternative would create fewer impacts to soils. Surface disturbance would be approximately 1 percent less than the total disturbance under the Proposed Action. However, impacts during construction, operations, maintenance, and reclamation would still be long-term. As under the Proposed Action, the approximately 458 acres that would not be reclaimed would represent a long-term impact to soils within the analysis area.

4.5.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

The types, intensity and duration of direct and indirect effects to soils under this alternative are expected to be similar to those described under the Proposed Action but would occur over a larger area. This alternative would involve additional road building and widening activities to establish an alternative main access route (Figure 2.4-2).

Construction of a power transmission line and maintenance road along the Northern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the Northwest Main Access Route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities. For this alternative, 64 more acres of surface disturbance would occur compared to the Proposed Action. This disturbance would be reclaimed. Impacts from long-term surface disturbance that would not be reclaimed would be similar to those described under the Proposed Action.

This additional disturbance would create additional direct impact to soils that would not occur under the Proposed Action. Soils that would be impacted by the Northwest Main Access Route Alternative, Northern Power Line Route would be slightly more prone to erosion than soils that would be impacted by the Northwestern Main Access Route Alternative, Southern Power Line Route. Impacts to soils during construction, operation, and maintenance of the Northwest Main Access Route Alternative, Northern Power Line Route would be long-term. Other components (facility construction, operation, maintenance, and reclamation) would be similar to those described under the Proposed Action and would therefore create similar impacts.

Overall, compared to the Proposed Action, this alternative would create greater impacts to soils. Surface disturbance would be approximately 2 percent more than the total disturbance under the Proposed Action. Impacts during construction, operations, maintenance, and reclamation would be long-term. As under the Proposed Action, the approximately 458 acres that would not be reclaimed, including the 334-acre pit expansion, would represent a long-term impact to soils within the analysis area.

4.5.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

The types, intensity and duration of direct and indirect effects to soils under this alternative are expected to be similar to those described under the Proposed Action but would occur over a larger area. This alternative would involve additional road building and widening activities to establish an alternative main access route (Figure 2.4-2).

Construction of a power transmission line and maintenance road along the Southern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the Northwest Main Access Route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities. For this alternative, 72 more acres of surface disturbance would occur compared to the Proposed Action. This disturbance would be reclaimed. Impacts from long-term surface disturbance that would not be reclaimed would be similar to those described under the Proposed Action.

This additional disturbance would create additional direct impact to soils that would not occur under the Proposed Action. Soils that would be impacted by the Northwest Main Access Route Alternative, Southern Power Line Route would be slightly less prone to erosion than soils that would be impacted by the Northwest Main Access Route Alternative, Northern Power Line Route. Impacts to soils during construction, operation, and maintenance of the Northwest Main Access Route Alternative, Southern Power Line Route would be long-term. Other components (facility construction, operation, maintenance, and reclamation) would be similar to those described under the Proposed Action and would therefore create similar impacts.

Overall, compared to the Proposed Action, this alternative would create greater impacts to soils. Surface disturbance would be approximately 2 percent more than the total disturbance under the Proposed Action. Impacts during construction, operations, maintenance, and reclamation would be long-term. As under the Proposed Action, the approximately 458 acres that would not be reclaimed, including the 334-acre pit expansion, would represent a long-term impact to soils within the analysis area.

4.5.8 Modified County Road Re-Route Alternative (Alternative 6)

The types, intensity and duration of direct and indirect effects to soils under this alternative are expected to be similar to those described under the Proposed Action.

Under this alternative, 7 fewer acres would be disturbed by new road construction along the county road re-route. In the future, if White Pine County elects to upgrade the county road re-route, implementing this alternative would disturb 28 acres during road widening activities. In comparison, the Proposed Action would result in 29 acres of disturbance due to road construction and widening. Overall, this alternative could result in 1 less acre of long-term disturbance compared to the Proposed Action. These impacts would be long-term.

Road widening, if required for the Modified County Road Re-Route Alternative, would span alluvium along most of the route. Road cuts or grading required to widen the road could experience minor slope instability due to construction. If rock cuts are required to construct the road, or if existing slopes are required to be undercut, sliding of the rock similar to that described for the pit under the Proposed Action, could also occur and affect traffic flow or damage equipment.

Overall, compared to the Proposed Action, this alternative would create similar impacts to soils. Impacts during construction, operations, maintenance, and reclamation would be long-term. As under the Proposed Action, the approximately 458 acres that would not be reclaimed, including the 334-acre pit expansion, would represent a long-term impact to soils within the analysis area.

4.5.9 Western Tailings Storage Facility Alternative (Alternative 7)

The types, intensity and duration of direct and indirect effects to soils under this alternative are expected to be similar to those described under the Proposed Action. Because the TSF and related facilities would be constructed in different locations, the areal extent of direct impacts to some soil units would be slightly different. The Western TSF footprint would cover 403 acres, compared to a 269-acre footprint for the Proposed Action TSF. Construction of the eastern fence line would create impacts to soils similar to those associated with construction of the fence line under the Proposed Action. Although the Western TSF footprint would be larger, overall this alternative would result in 118 fewer acres of total disturbance than the Proposed Action. Approximately 420 acres of disturbance would not be reclaimed, including the 334-acre pit expansion. Approximately 39 fewer acres would not be reclaimed when compared to the 458 acres that would not be reclaimed under the Proposed Action.

Soils at the proposed location of the Western Tailings Storage Facility have generally the same severe water erosion characteristics as the proposed location of the TSF under the Proposed Action. The Western TSF would, however, be constructed in a less-steep area with lower potential for off-site transport of eroded materials. Similarly, relocation of Borrow Area-1 from the southern margin of the mine facility would decrease the potential for erosion and off-site sediment transport in that area. Soil impacts due to the operation and maintenance of the tailings storage facility would be similar to those at the TSF under the Proposed Action.

Reclamation materials salvaged from the Western Tailings Storage Facility would have similar, generally poor reclamation material properties as those salvaged under the Proposed Action; therefore, overall reclamation success is expected to be similar. Other components (facility construction, operation, maintenance, and reclamation) would be similar to that described under the Proposed Action and would therefore create similar impacts.

Overall, compared to the Proposed Action, this alternative would create fewer impacts to soils and lessen the potential for off-site transport of eroded soil material. Surface disturbance would be approximately 3 percent less than the total disturbance under the Proposed Action. Impacts during construction, operations, maintenance, and reclamation would be long-term.

4.5.10 No Action Alternative (Alternative 8)

Current soil resource trends within the analysis area would continue under the No Action Alternative. Soils would continue to be very susceptible to erosion by water and moderately susceptible to wind erosion where they have been previously disturbed. In these areas, locally decreased soil productivity is expected to continue in the absence of reclamation activities. No direct or indirect impacts to soil resources beyond those previously authorized would occur as a result of implementation of the No Action Alternative.

4.5.11 Preferred Alternative (Alternative 9)

The types, intensity, and duration of direct and indirect effects to soils under this alternative are expected to be similar to those described under the Proposed Action.

Construction of a power transmission line and maintenance road along the Southern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the Northwest Main Access Route. Other segments of the route would be constructed or widened,

resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way outside of the existing right-of-way during road maintenance activities.

Under the Preferred Alternative, no new road construction would occur along the Modified County Road Re-route, resulting in 7 fewer acres of surface disturbance compared to the Proposed Action. In the future, if White Pine County elects to upgrade the Modified County Road Re-route, 28 additional acres would be disturbed during road widening activities. In comparison, the Proposed Action would result in 29 acres of disturbance due to road construction and widening.

Power line installation and road construction and widening would span alluvium along most of the routes. Road cuts or grading required to widen the road could be subject to minor slope instability due to construction. If rock cuts are required to construct the road segments, or if existing slopes are required to be undercut, sliding of the rock, similar to that described for the pit under the Proposed Action, could also occur and affect traffic flow or damage equipment.

Soils that would be impacted during construction of the Northwest Main Access Route and the Southern Power Line would be slightly less prone to erosion than soils that would be impacted by the Northwest Main Access Route Alternative, Northern Power Line Route. Impacts to soils during construction, operation, and maintenance of the Northwest Main Access Route and Southern Power Line would be long-term.

The Western TSF and related facilities would be constructed in different locations, and the areal extent of direct impacts to some soil units would be slightly different under this alternative. The Western TSF footprint would cover 403 acres, compared to a 269-acre footprint for the Proposed Action TSF. Although the Western TSF footprint would be larger, construction of the more compact facility layout would result in less total disturbance than the Proposed Action facility layout. Approximately 420 acres of disturbance would not be reclaimed, including the 334-acre pit expansion. Approximately 39 fewer acres would not be reclaimed when compared to the 458 acres that would not be reclaimed under the Proposed Action.

Soils at the proposed location of the Western TSF exhibit generally the same severe water erosion characteristics as the proposed location of the TSF under the Proposed Action. The Western TSF would, however, be constructed in an area with lesser slopes and lower potential for off-site transport of eroded materials. Similarly, relocation of Borrow Area-1 from the southern margin of the mine facility would decrease the potential for erosion and off-site sediment transport in that area. Soil impacts due to the operation and maintenance of the tailings storage facility would be similar to those at the TSF under the Proposed Action.

Reclamation materials salvaged from the Western TSF would exhibit generally poor reclamation material properties similar to those salvaged under the Proposed Action; therefore, overall reclamation success is expected to be similar. Other components (facility construction, operation, maintenance, and reclamation) would be similar to those described under the Proposed Action and would therefore create similar impacts.

In total, this alternative would result in 45 fewer acres of surface disturbance compared to the Proposed Action, or approximately 1 percent less than the total disturbance under the Proposed Action. Impacts during construction, operations, maintenance, and reclamation would be long-

term. Overall, compared to the Proposed Action, this alternative would create fewer impacts to soils and lessen the potential for off-site transport of eroded soil material.

4.5.12 Additional Monitoring and Mitigation

Mitigation Measure S-1: No additional monitoring measures are required. Compaction of soils during construction and operation activities could limit vegetation root growth and water-holding capacity of soils. Mitigation measures would include ripping or other means of loosening surface soils during reclamation activities. *Effectiveness*: Ripping or other means of loosening surface soils during reclamation activities would promote deeper vegetation growth, water-holding capacity of soils, and stabilization of reclaimed soils. *Effects on other resources*: Ripping or other means of loosening surface soils during reclamation activities could result in impacts to soils including loss of soil due to wind or water erosion, and impacts to surface water resources including increases in suspended sediment and turbidity in dry drainages because of increased erosion. Implementation of Applicant-Committed EPMs would minimize these impacts.

4.6 PRIME AND UNIQUE FARMLANDS

This section evaluates impacts to soils designated as Prime Farmlands under implementation of each of the alternatives. Impacts to other soil types are analyzed in Section 4.5.

As described in Section 3.6, no Unique Farmlands were identified in the project area. Impacts to Unique Farmlands would not be expected to result from implementation of any of the alternatives analyzed in this EIS; therefore, Unique Farmlands are not described further.

4.6.1 Analysis Areas

The analysis areas are the same as those used for soils (Section 4.5.1).

4.6.2 Indicators

Indicators used to assess potential impacts to prime farmlands include the following:

- Loss of productivity of soils classified as "Prime Farmland if Irrigated and Reclaimed of Excess Salts and Sodium" (Prime Farmland).

4.6.3 Proposed Action (Alternative 1)

Under the Proposed Action, the productivity of Prime Farmlands could be affected as a result of ground disturbances during construction of the proposed power line or during exploration activities. The types of anticipated environmental impacts to Prime Farmland soils include increased wind and water erosion, soil compaction, potential decreased soil productivity in disturbed areas, and potential contamination from spills of chemicals during transportation, storage, and use. These impacts could result from various activities as described below. Indirect impacts to Prime Farmlands are not expected to occur under the Proposed Action.

Construction

Anticipated impacts to soils designated as Prime Farmlands are similar to those described in Section 4.5, including potential loss of productive topsoil in disturbed areas, increased potential for wind and water erosion, soil compaction, and potential soil contamination from inadvertent spills of fuels or chemicals during transportation, storage, and use. A combined total of 3 acres of soils

designated as Prime Farmland could be disturbed during construction of the proposed power line and associated maintenance road (1.9 acres) and during exploration activities (1.1 acres). Section 4.6.12 describes mitigation regarding soil compactlon, including a mitigation measure (loosening compacted surface soils), its effectiveness, and effects on other resources.

Exploration activities such as construction of roads, drill pads, sumps, auger holes or trenches, and overland travel could cause short-term disturbances within Prime Farmlands. Soil disturbances would predominantly be limited to localized areas in the immediate vicinity of the activities and short-term during construction of roads, drill pads and other facilities. Specific acreage that may be affected by the exploration activities associated with the Proposed Action cannot be defined because drilling locations are not yet identified. It is possible that no exploration activities would occur within Prime Farmlands under the Proposed Action.

Midway's phasing and concurrent reclamation would minimize or eliminate long-term impacts to soils, including Prime Farmlands. Assuming that successful reclamation can be achieved upon completion of construction, little or no loss of Prime Farmland productivity is anticipated. Impacts to soils designated as Prime Farmland productivity would be short-term.

Operations, Maintenance and Reclamation

During operations, maintenance and reclamation, ongoing exploration activities would continue. The total disturbances to Prime Farmlands during exploration activities would not exceed 1.1 acres, and the type and intensity of impacts to soil resources designated as Prime Farmlands are expected to be similar to those described for construction.

Implementation of the Applicant-Committed EPMs described in Table 2.3-8 would minimize impacts to Prime Farmlands. Assuming that successful reclamation can be achieved for disturbed areas, little or no loss of Prime Farmland productivity is anticipated during operations, maintenance, and reclamation. Impacts to soils designated as Prime Farmland productivity would be short-term.

4.6.4 Northern Power Line Route Alternative (Alternative 2)

Construction and operations under the Northern Power Line Route Alternative would result in the same types, intensity and duration of impacts to Prime Farmlands as described under the Proposed Action, and 1.9 fewer acres of disturbance to Prime Farmlands would occur during alternative power line route construction. Assuming that successful reclamation can be achieved, impacts to Prime Farmland productivity would be short-term.

4.6.5 Southern Power Line Route Alternative (Alternative 3)

Construction and operations under the Southern Power Line Route Alternative would result in the same types, intensity and duration of impacts to Prime Farmlands as described under the Proposed Action, and 1.9 fewer acres of disturbance to Prime Farmlands would occur during alternative power line route construction. Assuming that successful reclamation can be achieved, impacts to Prime Farmland productivity would be short-term.

4.6.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

Implementation of the Northwest Main Access Route Alternative could result in up to 12 additional acres of disturbance to Prime Farmlands. Although up to 12 additional acres of Prime Farmlands

would be disturbed for construction of the proposed power line and associated maintenance road, construction and operations under this alternative would result in the same types, intensity and duration of impacts to Prime Farmlands as described under the Proposed Action. Assuming that successful reclamation can be achieved, impacts to Prime Farmland productivity would be short-term.

4.6.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

Implementation of the Northwest Main Access Route Alternative could result in up to 12 additional acres of disturbance to Prime Farmlands. Although up to 12 additional acres of Prime Farmlands would be disturbed for construction of the proposed power line and associated maintenance road, construction and operations under this alternative would result in the same types, intensity and duration of impacts to Prime Farmlands as described under the Proposed Action. Assuming that successful reclamation can be achieved, impacts to Prime Farmland productivity would be short-term.

4.6.8 Modified County Road Re-Route Alternative (Alternative 6)

Construction and operations under the Modified County Road Re-Route Alternative would result in the same types, intensity and duration of impacts to Prime Farmlands as described under the Proposed Action, and up to 3 acres of disturbance to Prime Farmlands would occur. Assuming that successful reclamation can be achieved, impacts to Prime Farmland productivity would be short-term.

4.6.9 Western Tailings Storage Facility Alternative (Alternative 7)

Construction and operations under the Western Tailings Storage Facility Alternative would result in the same types, intensity and duration of impacts to Prime Farmlands as described under the Proposed Action, and up to 3 acres of disturbance to Prime Farmlands would occur. Assuming that successful reclamation can be achieved, impacts to Prime Farmland productivity would be short-term.

4.6.10 No Action Alternative (Alternative 8)

Under the No Action Alternative, previously authorized exploration activities would continue as described in Section 2.2. Exploration activities within the northernmost corner of the 2012 Exploration Plan of Operations boundary may result in a maximum total disturbance of 0.84 acre of Prime Farmland.

4.6.11 Preferred Alternative (Alternative 9)

Construction and operations under this alternative would result in the same types, intensity, and duration of impacts to Prime Farmlands as those described under the Proposed Action. Construction of the Northwest Main Access Route could result in up to 12 additional acres of disturbance to Prime Farmlands. Assuming that successful reclamation can be achieved, impacts to Prime Farmland productivity would be short-term.

4.6.12 Additional Monitoring and Mitigation

Mitigation Measure F-1: No additional monitoring is required. Compaction of soils during construction and operation activities could limit vegetation root growth and water-holding capacity of soils. Mitigation measures would include ripping or other means of loosening of surface soils

during reclamation activities. *Effectiveness*: Ripping or other means of loosening surface soils during reclamation activities would promote deeper vegetation growth, water-holding capacity of soils, and stabilization of reclaimed soils. *Effects on other resources*: Ripping or other means of loosening surface soils during reclamation activities could result in impacts to soils including loss of soil due to wind or water erosion, and impacts to surface water resources including increases in suspended sediment and turbidity in dry drainages because of increased erosion. Implementation of Applicant-Committed EPMs would minimize these impacts.

4.7 AIR QUALITY

The proposed project has the potential to emit CO, NO_x, SO_2, coarse and fine particulate matter (PM_{10} and $PM_{2.5}$, respectively), Pb, VOCs GHG emissions, and small amounts of HAPs. These emissions could impact air quality in the project area over the life of the mine project. During operations, production equipment would be subject to current and future state and federal regulations related to gold mining and associated emission control requirements.

The primary indicator of potential impacts to air quality would be compliance or exceedance of a Nevada or national ambient air quality standard (Table 3.7-2). This table shows the Nevada and national ambient air quality standards for six criteria pollutants (CO, Pb, NO_2, O_3, PM_{10}/$PM_{2.5}$, and SO_2), which are considered harmful to public health and the environment. For this analysis, predicted impacts are compared to NvAAQS and NAAQS.

A comprehensive inventory of potential sources of Gold Rock Mine air pollutant emissions identified 195 individual emission units, including stationary "point" sources; "fugitive" sources; and mobile and non-road combustion sources. Estimates were made of the emission rates from each emission unit for: 1) four criteria air pollutants PM_{10}, $PM_{2.5}$, CO and SO_2); 2) two criteria air pollutant precursors (NO_X) and volatile organic compounds (VOCs); 3) two greenhouse gases, CO_2 and CH_4; and 4) HAPs and thermal Hg. These estimates were made for all five applicable criteria air pollutant regulatory time averaging periods (annual, 24-hour, 3-hour, 8-hour, and 1-hour) using the proposed project year with the potential for the greatest air pollution emissions (Year 10), and using Midway operational parameters and generally available EPA and other emission factors (EMA 2014b).

The EPA-approved AMS/EPA Regulatory Model (AERMOD) (Version 14134) was used with 1 year of representative on-site meteorological data (year 2013), per EPA's modeling guidance in Appendix W to 40 CFR Part 51 (EMA 2014b). The data were processed using AERMET Version 14134 to conduct ambient air quality modeling for the proposed project (EMA 2014b). Additional information describing the modeling that was conducted for the this project and associated results are further described in the subsection "Dispersion Modeling". A cumulative impact assessment also was conducted, and results of the cumulative impact assessment are summarized in section 5.9.

Based on current regulatory guidance, it is assumed that no long-range or "far-field" modeling (greater than 50 km from source) will be needed to assess impacts to Class I Areas. The nearest Class I area (Jarbidge Wilderness Area) is greater than 150 miles (250 kilometers) from the project area. Per Federal Land Managers' Air Quality Related Values Work Group's "Quantity Over Distance" ("Q/D") screening test, if the Q/D value is less than or equal to 10, no adverse impacts would be anticipated. Based on this screening criterion applied to the Gold Rock Mine Project, emissions would need to be greater than 2,500 tons/year to impact this closest Class I area. Proposed project emissions are anticipated to be well below 2,500 tons/year and therefore no adverse impacts to the Class I area are anticipated. Thus, a requirement for air quality related value (AQRV) analyses such as visibility impairment or sulfur/nitrogen deposition are not anticipated

during the air permitting process. In addition, because most of the emissions from the project would be generated from low level sources, long-range transport of these emissions is not likely.

4.7.1 Analysis Areas

The analysis area for all alternatives except the No Action Alternative is the Plan area and a 1.8-mile (3,000 meter) receptor grid. This area includes the open pit, stockpiles, waste rock disposal area, mill and ancillary facilities. This area also includes the predicted maximum impact region for dispersion modeling. The analysis area for the No Action Alternative occurs within the approved, amended 2011 Exploration Plan area.

4.7.2 Indicators

Indicators used to assess potential impacts to air quality include the following:

- Potential effects on the airshed ("near-field" impact analysis) and air quality associated with project-generated air pollution emissions such as fugitive dust, emissions from ancillary facilities, and vehicular emissions;
- Release of potentially toxic pollutants, including mercury; and
- Effects on local and regional air quality, especially Class I airsheds.

4.7.3 Proposed Action (Alternative 1)

Construction

Air quality impacts associated with construction (lasting approximately 1 year) and exploratory drilling activities (life of mine) would include emissions from construction equipment, site preparation, drilling, and wind-blown fugitive dust. Earth-moving equipment and other combustion equipment used during construction would be sources of nitrogen oxides (NO_x), CO, VOCs, SO_2, PM_{10}, $PM_{2.5}$, and GHG emissions. Fugitive dust would result from activities associated with land clearing, grading, excavation, vehicular traffic on roads, and wind erosion. Vehicles traveling on paved and unpaved roads would also generate fugitive dust.

The quantity of dust generated is a function of construction activities, silt and moisture content of the soil, wind speed, frequency of precipitation, vehicle traffic, vehicle types, and roadway characteristics. Fugitive dust from construction and exploratory activities would be minimized through the use of BMPs on unpaved, unvegetated surfaces. Typical BMPs include use of water trucks to spray water on disturbed areas on a regular basis, pre-watering areas to be disturbed, managing vehicle speeds on roads within the Plan area, and using graveled entrance and exit areas as track-out controls. Appropriate BMPs would be identified in a Fugitive Dust Control Plan that would be developed as a mandatory part of Nevada's air permitting process.

Implementation of the Proposed Action would result in approximately 3,946 acres of disturbance (Table 2.3-1). The surface area between mine components is referred to as "inter-facility disturbance" and was assumed to be subject to disturbance during operation of the mine.

Estimated combined area source emissions of criteria pollutants during the initial construction period and exploratory drilling activities occurring through the life of the mine are summarized in Table 4.7-1.

Table 4.7-1 Estimated Emissions (tons) Due to Construction Activities

Source Category	$PM_{2.5}$	PM_{10}	PM	CO	NO_x	SO_2	VOC	GHG[1]
Fugitives	6.9	18.1	42.3	126.3	115	0.69	32.0	20,919

Notes:

1 Greenhouse Gases (GHG) are presented in units of metric tons of CO_2e emissions for comparison to the GHG reporting standard. A 1.10 ton to 1 metric ton conversion factor was applied.

Estimated emissions due to construction activities were estimated based on available information on similar activities that would occur during operations.

"Fugitives" include:

- Road fugitive dust (dust from traffic on all haul roads and service roads within the Plan area),
- Other fugitive dust (dust from exploration, road construction, surface preparation for ancillary facility and power line corridor), and Combustion emissions of VOCs and NO_2 (vehicle and mobile equipment engine combustion emissions).

$PM_{2.5}$ is a subset of PM_{10}, and both $PM_{2.5}$ and PM_{10} are subsets of PM. An emission factor is identified for each activity that is applied to calculate PM; then a ratio is applied to calculate PM_{10} and $PM_{2.5}$ from the total. For some activities PM equals PM_{10}. Further information on PM estimation and modeling is presented in EMA (2014a,b). Estimated concentrations of PM_{10} and $PM_{2.5}$ are presented for comparison to air quality standards.

Operation, Maintenance, and Reclamation

Process Air Pollutant Emissions

The Proposed Action was analyzed for air emissions from the open pit, crushers, two WRDAs, a heap leach pad, processing ponds and plant, a mill, a CIL plant, a TSF, water supply wells and delivery/storage system, haul and access roads, growth media stockpiles, and ancillary support facilities.

Nearly all substantial sources of criteria air pollutant emissions from the Project (or any other mine) are reasonably proportional to the rate of production and processing of the mined material (that is, the mine's "throughput"). This is especially true of PM_{10} and $PM_{2.5}$ emissions, the criteria air pollutants emitted from the greatest number of Project sources, and typically the air pollutants of greatest concern for a mining operation. A secondary factor is the distance this mined material is moved by haul trucks, as the transport of material by haul trucks on unpaved roads is typically the single largest source of PM_{10} and $PM_{2.5}$ emissions for mine projects. Estimated annual Project material production rates would be the same in each of the expected 10 years of mine life. Year 10, the year with the largest number of predicted haul truck miles, was selected as the Project period to be assessed in the emission inventory and modeled for ambient air quality impacts.

Under the Proposed Action, it is anticipated that the mine would require a Class I operating permit from NDEP. Emissions of criteria pollutants from process sources are summarized in Table 4.7-2.

Table 4.7-2 Process and Ancillary Emissions (tons/year) During Operation

Source Category	$PM_{2.5}$	PM_{10}	PM	CO	NO_x	SO_2	VOC
Process	21.7	117.5	294.4	0	0	0	0
Combustion	1.2	1.2	1.2	7.4	12.3	1.1	1.3

Notes:

Process = Permitted Particulate Matter Emission Sources, including particulate matter emissions from the three-stage mill crushing system, the three-stage heap crushing system, the heap overland jump conveyors, lime and cement silos and the melt furnace baghouse.

Combustion = Permitted Combustion Emission Sources, including combustion emissions from the carbon reactivation kiln, the mercury retort, the melt furnace burner, the building heaters, the process water heater, the emergency generators and the fuel tanks.

$PM_{2.5}$ is a subset of PM_{10}, and both $PM_{2.5}$ and PM_{10} are subsets of PM. An emission factor is identified for each activity that is applied to calculate PM; then a ratio is applied to calculate PM_{10} and $PM_{2.5}$ from the total. For some activities PM equals PM_{10}. Further information on PM estimation and modeling is presented in EMA (2014a,b). Estimated concentrations of PM_{10} and $PM_{2.5}$ are presented for comparison to air quality standards.

Sources: EMA 2014a

These are the emissions estimates that are expected to be requested as emission limits in an air permit application. The summary includes all on-site operational emissions from point sources, including thermal sources, combustion sources, and storage silos, as well as process fugitives consisting of crushing and transferring, and conveying and stacking. Appendix A of the air quality modeling report (EMA 2014b) presents a table of 195 emissions units.

Area Source Emissions

Distributed (area source or nonstationary point source) emissions would include fugitive dust emissions from activities such as drilling, blasting, loading, unloading, crushing, wind erosion, vehicular travel on haul roads, and excavation. Other area sources would include tailpipe emissions from earth-moving equipment, other combustion equipment and vehicles. It is anticipated that these area source emissions would comprise the majority of the total air quality emissions for the project.

Environmental protection measures for fugitive dust noted above for the construction period and in Table 2.3-8 also would be implemented during operation. Environmental protection measures could include dust control using water and chemical application. A standard control would include managing vehicular speed limits on roads within the Plan area. To further minimize fugitive dust emissions, soils would be stabilized as soon as possible after disturbance. Construction equipment may be equipped with retrofit controls to reduce exhaust emissions of $NO_x$and diesel particulate emissions. Combustion sources are typically controlled by catalytic oxidizers. Vehicles would be maintained to the manufacturer's specifications. Controls such as application of water would be used to manage fugitive emissions during material handling processes such as rock crushing. It is anticipated that these measures would be effective in minimizing the generation of fugitive dust and related impacts. Estimated area source emissions of criteria pollutants during operations are summarized in Table 4.7-3.

Table 4.7-3 Area Source Emissions Potential to Emit (tons/year) During Operation

Source Category	$PM_{2.5}$	PM_{10}	PM	CO	NO_x	SO_2	VOC
Fugitives	52.2	344	1292	172	217	0.6	38.6

Notes:
"Fugitives" include:

- Road Fugitive Dust Emission Sources (includes fugitive dust emission from traffic on all the haul roads and the service roads);
- Other Fugitive Dust Emissions (includes fugitive dust from most of the mining and ancillary activities, including drilling, blasting, loading, dumping, dozing, wind erosion and road maintenance (grading));
- Non-Road Mobile Engine Combustion Emission Sources (includes combustion emissions from drill rigs, blasting trucks, loaders, dozers, haul trucks, light plants, miscellaneous support equipment and delivery truck combustion emissions while driving on roads within the fenced mine area boundary)

$PM_{2.5}$ is a subset of PM_{10}, and both $PM_{2.5}$ and PM_{10} are subsets of PM. An emission factor is identified for each activity that is applied to calculate PM; then a ratio is applied to calculate PM_{10} and $PM_{2.5}$ from the total. For some activities PM equals PM_{10}. Further information on PM estimation and modeling is presented in EMA (2014a and 2014b). Estimated concentrations of PM_{10} and $PM_{2.5}$ are presented for comparison to air quality standards.
Sources: EMA 2014a

Commuter and Supply Vehicle Emissions

All vehicles accessing the proposed project area would be sources of combustion emissions. This would include workers in vehicles accessing the project area daily as well as deliveries and receipt of supplies. Combustion emissions would include criteria pollutants from vehicle tailpipes. Total vehicle miles were calculated to estimate potential vehicle emissions. Total tailpipe emissions for commuter travel and supply vehicle travel for the Proposed Action were calculated using a ratio of the vehicles used at the Pan Mine (BLM 2013c) and proposed to be used at the Gold Rock

Mine Project (Sections 2.3 and 4.8). The Pan Mine emissions data were derived from the EPA's MOVES model. Emissions are summarized in Table 4.7-4.

Table 4.7-4 Access and Highway Vehicle Tailpipe Emissions (tons/year) During Operation

Source Category	$PM_{2.5}$	PM_{10}	PM	CO	NO_x	SO_2	VOC
Highway Vehicle Traffic	0.89	0.89	0.89	18.5	20.5	0.05	2.17
Access Road Vehicle Traffic	0.42	0.42	0.42	7.11	6.64	0.02	0.72

Notes:
$PM_{2.5}$ is a subset of PM_{10}, and both $PM_{2.5}$ and PM_{10} are subsets of PM. An emission factor is identified for each activity that is applied to calculate PM; then a ratio is applied to calculate PM_{10} and $PM_{2.5}$ from the total. For some activities PM equals PM_{10}. Further information on PM estimation and modeling is presented in EMA (2014a and 2014b). Estimated concentrations of PM_{10} and $PM_{2.5}$ are presented for comparison to air quality standards.

Greenhouse Gas Emissions

Climate change analyses are composed of several factors, including GHGs, land use management practices, and the albedo effect. Specific levels of significance have not yet been established. Therefore, climate change analysis for the purpose of this document is limited to accounting and disclosing of factors that contribute to climate change. In this analysis, estimated GHG emissions are used as a reasonable proxy for a comparison of climate change impacts by alternative.

Mine operations that would contribute to GHG emissions include direct combustion of fossil fuels (dominated by diesel) by process sources (also referred to a stationary sources) and by vehicles and mobile equipment (referred to as mobile sources). Table 4.7-5 presents GHG emissions estimates from on-site sources in metric tons/year of CO_2e. The estimated process emissions of GHG anticipated under the Proposed Action represent approximately 0.017 percent of 2010 statewide gross GHG emissions (NDEP 2012).

Table 4.7-5 Direct Project Greenhouse Gas Emissions (metric tons /year CO_2e) During Operations

Source Category	CO_2e*
Process	7,726
Fugitives	25,750

Notes:
* CO_2e emissions are presented in units of metric tons/year for comparison to the GHG reporting standard. A 1.10 ton to 1 metric ton conversion factor was applied to the Environmental Management Associates (2014a) results.
"Process" = Permitted Combustion Emission Sources (includes combustion emissions the carbon reactivation kiln, the mercury retort, the melt furnace burner, the building heaters, the process water heater, the emergency generators and the fuel tanks).
"Fugitives" include:
- Non-Road Mobile Engine Combustion Emission Sources (includes combustion emissions from drill rigs, blasting trucks, loaders, dozers, haul trucks, light plants, miscellaneous support equipment and delivery truck combustion emissions while driving on roads within the fenced mine area boundary)

Estimated CO_2 emissions would contribute 7,726 metric tons of CO_2e emissions per year, or nearly 100 percent of the total estimated 7,726 metric tons of CO_2e per year, while estimated CH_4 emissions would contribute 0.1 metric ton of CO_2e emissions per year, or less than 1 percent of the total estimated 7,726 metric tons of CO_2e per year.
Sources: EMA 2014a

The EPA finalized the GHG reporting requirements for regulated sources in 40 CFR Part 98. Under this rule, facilities must report GHG emissions if:

1) Facility component or components meet the definition of any source category listed in Table A-3 under 40 CFR Part 98,

2) Facility component or components meet the definition of any source category listed in Table A-4 under 40 CFR Part 98 and emit 25,000 metric tons CO_2e or more per year, or

3) Facility component or components include stationary combustion unit(s) with aggregate maximum heat input capacity 30 million British thermal units per hour (mmBtu/hr) or more and emit 25,000 metric tons CO_2e or more per year.

The Proposed Action is not anticipated to be subject to the GHG reporting program of 40 CFR Part 98 because the facility would not operate source categories listed in Tables A-3 or A-4 pf 40 CFR Part 98, and because the estimated process emissions for stationary combustion units of approximately 7,700 metric tons/year CO_2e would be less than the reporting threshold value of 25,000 metric tons/year.

Operations would always require some level of truck haulage to transport any waste identified as PAG to specific locations on the WRDAs; however, in an effort to minimize project-related GHG emissions, Midway would use conveyors to transport the ore on to the heap, where practical (Section 2.3.4, Open Pit). Midway would maintain equipment to ensure efficient combustion (Table 2.3-8, Air Quality) and may coordinate the operation of busses or vans to shuttle employees from Ely and/or Eureka to the mine site (Section 2.3.13 Transportation). If implemented, any of these measures would minimize associated GHG emissions.

Combustion of propane for on-site process heating also would contribute to GHG emissions. Propane would be used in heating site facilities during winter months and could be used to power equipment such as microwave towers or repeaters at communications facilities. In the Plan Midway proposed an initial, conservative estimate of 1,535 gallons/day of propane during winter months (Table 2.3-4), which would contribute approximately 3,177 metric tons/year of CO_2e. However, a similar gold heap leach and milling operation in the region used an average of approximately 107 gallons/day of propane, or 39,050 gallons/year during full-scale operation (Lystrup 2016), which would contribute approximately 222 metric tons/year of CO_2e.

Purchased power also contributes to GHG emissions: Generation of electricity at the power plants that furnish power to the grid supplying power to the proposed project also would contribute to GHG emissions. The Gold Rock Mine Project would be located within the certified service territory of the local electrical cooperative, Mt. Wheeler Power. Mt. Wheeler Power holds a contract with and receives power from the regional electrical cooperative Deseret Power.

Operation of the proposed project would require approximately 25,694 Megawatt-hours/year of electrical power (Williams 2016). Generation of approximately 25,694 Megawatt-hours/year of electrical power would result in an indirect impact of approximately 27,556 metric tons/ year of CO_2e (Crabtree 2016). Deseret Power currently generates enough power to meet the projected needs of the Gold Rock Mine Project; therefore, no additional purchased power-related emissions are anticipated as a result of the Gold Rock Mine Project. Table 4.7-6 presents annual direct and indirect GHG emissions under the Proposed Action.

Table 4.7-6 Annual Direct and Indirect Greenhouse Gas Emissions (metric tons/year CO_2e) Under the Proposed Action

Proposed Action Source Type	Diesel and Gasoline Fuel Combustion (metric tpy)[1]	Propane Fuel Combustion		Purchased Power Generation (metric tpy)[4]	Total GHG Emissions (metric tpy)
		Minimum (metric tpy)[2]	Maximum (metric tpy)[3]		
"Process Sources" or "Stationary Sources"	7,726	222	3,177	27,556	35,504 to 38,459
Mobile Sources	25,750	NA	NA	NA	25,750
Total	33,476	222	3,177	27,556	61,254 to 64,209

Notes:
NA – Not applicable

metric tpy – metric tons per year
CO_2e emissions are presented in units of metric tons/year for comparison to the GHG reporting standard. A 1.10 ton to 1 metric ton conversion factor was applied to the Environmental Management Associates 2014a and Midway 2013a results.
Sources:
1 EMA 2014a
2 Midway 2013a, EPA 2008b
3 Lystrup 2016, EPA 2008b
4 Crabtree 2016

Mercury Emissions

Sources of mercury emissions are derived primarily from soil where mercury occurs naturally. Emissions of mercury would be generated during material handling activities such as rock crushing. Mercury would also be generated during the refining (thermal) processes (carbon kiln, retort and the furnace). The Nevada air quality permitting rules require the use of Maximum Achievable Reduction Technology (MACT) for mercury emissions at mine sites that include thermal units. Mercury emissions would also occur from combustion of fossil fuels. Estimated mercury emissions during operations are summarized in Table 4.7-7.

Table 4.7-7 Proposed Action Mercury Emissions (tons/year) During Operation

Source Category	Mercury
Total (Thermal & Non-Thermal)	6.32E-03
Thermal	4.24E-03

Notes:
Non-thermal sources of Hg include fugitive emissions from the ore during drilling, blasting, loading/unloading, dozing, grading, wind erosion, and conveying; and combustion of propane.
Sources: EMA 2014b

Hazardous Air Pollutant Emissions

HAPs could be deposited on soils, vegetation, or water and could result in wildlife, wild horse, livestock, or human exposure. Sources of HAPs for the Proposed Action would include hydrocarbon combustion, the refining process, and constituents found in fugitive dust from ore and waste rock and process chemicals used on-site. Emissions of HAPs for the Proposed Action were calculated using AP-42 emissions factors as well as proposed maximum process rates for the facility. The emissions of these pollutants were calculated for the project; as summarized in Table 4.7-8. Implementation of the Fugitive Dust Control Plan would control or reduce HAPs emissions.

Table 4.7-8 Proposed Action HAPs Emissions (tons/year) During Operation

Pollutant	Emissions
1,3-Butadiene	1.52E-04
Acetaldehyde	8.00E-03
Acrolein	1.93E-03
Benzene	1.58E-01
Dichlorobenzene	6.34E-05
Formaldehyde	2.43E-02
Hexane	9.51E-02
Naphthalene	2.62E-02
Toluene	5.77E-02
POM	4.66E-06
Xylene	3.95E-02
Antimony	7.98E-03
Arsenic	2.21E-01
Beryllium	7.77E-03
Cadmium	6.22E-04
Chromium	6.41E-03
Cobalt	2.99E-03
Lead	1.14E-02
Manganese	1.59E-01
Mercury	6.32E-03
Nickel	1.28E-02
Phosphorus	1.84E-01
Selenium	1.27E-06
Total HAPs	1.03E+00

Sources: EMA 2014b

Prevention of Significant Deterioration Potential to Emit

Prevention of Significant Deterioration (PSD) air permitting requirements apply to new major stationary sources or major stationary source modifications. A major stationary source is any source type belonging to any of the listed 28 source categories from 40 CFR, Part 52, Subpart A, §52.21 (b)(1)(i) that emit 100 tons per year or more or any source type that emits or has the potential to emit 250 tons per year of any New Source Review (NSR) regulated pollutant. As of January 2, 2011, GHG are now considered a regulated NSR pollutant under the PSD major source permitting program. For PSD purposes GHGs are regulated by the CO_2 equivalent (CO_2e) emissions as a single air pollutant. CO_2e is defined from the aggregate group of carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). For air permits issued after July 1, 2011, PSD is only applicable if the CO_2e emissions are equal to or greater than 100,000 tons per year (EPA 2011).

The Proposed Action does not belong in any of the listed 28 PSD source categories; therefore, the facility PSD permitting threshold is 250 tons per year or more for NSR pollutants. The air permit for this project would be issued after July 1, 2011; therefore, the PSD permitting threshold for GHG emissions is 100,000 tons per year. Table 4.7-9 presents the estimated annual facility emissions in comparison to the PSD permitting threshold. Fugitive dust emissions from blasting, loading, dumping, and haul road traffic are not included in the Potential To Emit (PTE) emissions as directed by EPA guidance (USEPA 1980). A PSD permit is not expected to be required for the Gold Rock Mine Project because all PTE emissions are below PSD thresholds.

Table 4.7-9 Stationary Source Annual Potential to Emit Emissions (tons/year)

Source Category	$PM_{2.5}$	PM_{10}	CO	NO_x	SO_2	VOC	CO_2e
PSD Threshold	250	250	250	250	250	250	100,000
Process	21.7	117.5	0	0	0	0	0
Combustion	1.2	1.2	7.4	12.3	1.1	1.3	8,516
Non-Road Mobile Engines	7.8	8.4	142.2	213.1	0.5	38.6	28,157
Other Mine Sources	0	0	30.2	3.9	0.1	0	228
Total Potential To Emit (PTE)	30.7	127.1	179.8	229.3	1.7	39.9	36,901

Notes:
Process = Permitted Particulate Matter Emission Sources, including particulate matter emissions from the three-stage mill crushing system, the three-stage heap crushing system, the heap overland jump conveyors, lime and cement silos and the melt furnace baghouse.
Combustion = Permitted Combustion Emission Sources, including combustion emissions from the carbon reactivation kiln, the mercury retort, the melt furnace burner, the building heaters, the process water heater, the emergency generators and the fuel tanks.
Non-Road Mobile Engines = Combustion Emission Sources (includes combustion emissions from drill rigs, blasting trucks, loaders, dozers, haul trucks, light plants, miscellaneous support equipment and delivery truck combustion emissions while driving on roads within the fenced mine area boundary)
$PM_{2.5}$ is a subset of PM_{10}, and both $PM_{2.5}$ and PM_{10} are subsets of PM. An emission factor is identified for each activity that is applied to calculate PM; then a ratio is applied to calculate PM_{10} and $PM_{2.5}$ from the total. For some activities PM equals PM_{10}. Further information on PM estimation and modeling is presented in EMA (2014a,b). Estimated concentrations of PM_{10} and $PM_{2.5}$ are presented for comparison to air quality standards.
CO_2e emissions are presented in units of short tons/year (not metric tons) for PSD applicability calculations (EPA 2011).
Sources: EMA 2014a

Summary of Emission Estimates

This ambient air impact analysis considered background concentrations of air pollutants in combination with modeled estimates of proposed project emissions. Both the background concentrations and dispersion modeling are described below.

Background Concentrations

Particulate Matter

In both the DEIS and this FEIS, the BLM used background concentrations for PM_{10} and $PM_{2.5}$ that NDEP has recommended for air quality permitting (Section 3.7 and Table 3.7-3). The BLM has added these background concentrations to modeled air pollution results to estimate the total potential air quality impacts of PM_{10} and $PM_{2.5}$ (Table 4.7-11 and Table 4.7-11).

Carbon Dioxide, Nitrogen Dioxide, and Sulfur Dioxide

In the DEIS, the BLM used NDEP-recommended permitting values of zero as background concentrations for gaseous air pollutants CO, NO_2 and SO_2 (Section 3.7 and Table 3.7-3). To address comments on the DEIS regarding air quality, the BLM also has used a more conservative but materially similar approach in this FEIS and identified representative background concentrations greater than zero for gaseous air pollutants CO, NO_2 and SO_2 (Section 3.7 and Table 3.7-3). In this FEIS the BLM also has added these representative background concentrations to modeled air pollution results to estimate the total air quality impacts to CO, NO_2 and SO_2 (Table 4.7-10 and Table 4.7-11).

Dispersion Modeling

Dispersion modeling was conducted to estimate the potential impacts from the proposed project emissions for the following criteria air pollutants (CO, NO_2, and SO_2, and $PM_{2.5}$, PM_{10},). Calculated NO_X emissions were used to predict the potential NO_2 impacts. The modeling was performed with the EPA-recommended model AERMOD (Version 14134), using 1 year of on-site meteorological data representative of local dispersion conditions. On-site meteorological data were collected by

Table 4.7-10 Maximum Model-Predicted Impacts of Proposed Action – NAAQS

Pollutant	Averaging Period	Class II Increment[1] (µg/m³)	NAAQS (µg/m³)	Modeled Impact[2] (µg/m³)	NDEP-Recommended Background Concentration (Used in DEIS)[3] (µg/m³)	Selected Representative Background Concentration[4] (µg/m³)	Total Impact, Using NDEP-Recommended Background Concentration (Presented in DEIS)[3] (µg/m³)	Total Impact, Using Selected Representative Background Concentration[4] (µg/m³)
CO	8-hour	NA	10,000	57.4	0	744	57.4	801
	1-hour	NA	40,000	154	0	1,947	154	2,101
NO_2	Annual	25	100	6.5	0	2.1	6.5	8.6
	1-hour	NA	188	157	0	9.1	157	166
SO_2	Annual	20	No standard	0.75	NA	2.7	0.75	3.45
	24-hour	91	No standard	3.4	NA	5.2	3.4	8.6
	3-hour	512	1,300	10.9	0	6.3	10.9	17.2
	1-hour	NA	196	17.9	0	6.0	17.9	23.9
PM_{10}	24-hour	30	150	24.2	10.2	10.2	34.4	34.4
$PM_{2.5}$[5]	Annual	4	12	2.04	2.4	2.3	4.44	4.34
	24-hour	9	35	14.3	7.0	8.0	21.3	22.3

Notes:
CO = Carbon monoxide
SO_2 = Sulfur dioxide
$PM_{2.5}$ - Particulate matter 2.5 microns or less in diameter
NAAQS = National Ambient Air Quality Standard
NO_2 = Nitrogen dioxide
PM_{10} = Particulate matter 10 microns or less in diameter
NA = not applicable
NDEP = Nevada Division of Environmental Protection

1 Class II increment values presented in NDEP 2013d.
2 Modeled impacts for the proposed project presented in Environmental Management Associates 2014b.
3 Bureau of Air Pollution Control (BAPC) recommended values for use in state air quality permitting (EMA 2014) and used in the DEIS; values for PM_{10} were based on contemporary measurements at Great Basin National Park – Lehman Caves monitoring station and $PM_{2.5}$ were based on contemporary measurements at Jarbidge Wilderness Area monitoring station. See Section 3.7 and Table 3.7-3 in this FEIS for summary of values recommended by NDEP for air quality permitting.
4 See Section 3.7 and Table 3.7-3 in this FEIS for summary of process used to select representative background concentrations; sources of concentrations are also identified in footnotes below.
   CO = Selected carbon monoxide background concentrations are based on measurements at the Yosemite National Park – Turtleback Dome monitoring station.
   NO_2 = Selected nitrogen dioxide background concentrations are based on measurements at the Alamo Lake State Park monitoring station.
   SO_2 = Selected sulfur dioxide background concentrations are based on measurements at the Alamo Lake State Park monitoring station. Please note that in 2010 the EPA discontinued regulation of the standards for annual and 24-hour averaging periods for SO_2; however, values were included for completeness of the table and for comparison to the NvAAQS annual and 24-hour standards.
   PM_{10} = Selected PM_{10} background concentrations are the current NDEP-recommended values for air quality permitting; concentrations are based on measurements at the Great Basin National Park – Lehman Caves monitoring station. Please note that in 2006 EPA and BAPC discontinued regulation of a PM_{10} annual standard.
   $PM_{2.5}$ = Selected $PM_{2.5}$ background concentrations are the current NDEP-recommended values for air quality permitting; concentrations are based on measurements at the Jarbidge Wilderness Area monitoring station.
5 For $PM_{2.5}$, the value 12 µg/m³ was promulgated as the federal primary annual standard in 2012, with a secondary standard set at 15 µg/m³.

Table 4.7-11 Maximum Model-Predicted Impacts of Proposed Action – NvAAQS

Pollutant	Averaging Period	Class II Increment[1] (µg/m³)	NvAAQS (µg/m³)	Modeled Impact[2] (µg/m³)	NDEP-Recommended Background Concentration (Used in DEIS)[3] (µg/m³)	Selected Representative Background Concentration[4] (µg/m³)	Total Impact Using NDEP-Recommended Background Concentration (Presented in DEIS)[3] (µg/m³)	Total Impact, Using Selected Representative Background Concentration[4] (µg/m³)
CO	8-hour	NA	10,500	71.7	0	744	71.7	816
	1-hour	NA	40,500	203	0	1,947	203	2,150
NO_2	Annual	25	100	8.7	0	2.1	8.7	10.8
	1-hour	NA	188	NM	0	9.1	157	166
SO_2	Annual	20	80	0.75	0	2.7	0.75	3.45
	24-hour	91	365	3.7	0	5.2	3.7	8.9
	3-hour	512	1,300	12.2	0	6.3	12.2	18.5
	1-hour	NA	196	17.9	0	6.0	17.9	23.9
PM_{10}	24-hour	30	150	28.3	10.2	10.2	38.5	38.5
$PM_{2.5}$[5]	Annual	4	12	NM	2.4	2.3	4.44	4.34
	24-hour	9	35	NM	7.0	8.0	21.3	22.3

Notes:

CO = Carbon monoxide
NO_2 = Nitrogen dioxide
SO_2 = Sulfur dioxide
PM_{10} = Particulate matter 10 microns or less in diameter
$PM_{2.5}$ - Particulate matter 2.5 microns or less in diameter
NA = not applicable
NvAAQS = Nevada Ambient Air Quality Standard
NDEP = Nevada Division of Environmental Protection
NM = not modeled; please note that when the air quality modeling was conducted, no modeling was conducted for certain averaging periods for NO_2, SO_2, or $PM_{2.5}$ NvAAQS because the NvAAQS standards had not yet been promulgated by the state.

1 Class II increment values presented in NDEP 2013d.

2 Modeled impacts for the proposed project presented in Environmental Management Associates 2014b.

3 Bureau of Air Pollution Control (BAPC) recommended values for use in state air quality permitting (EMA 2014) and used in the DEIS; values for PM_{10} were based on contemporary measurements at Great Basin National Park – Lehman Caves monitoring station and $PM_{2.5}$ were based on contemporary measurements at Jarbidge Wilderness Area monitoring station. See Section 3.7 and Table 3.7-3 in this FEIS for summary of values recommended by NDEP for air quality permitting.

4 See Section 3.7 and Table 3.7-3 in this FEIS for summary of process used to select representative background concentrations; sources of concentrations are also identified in footnotes below.

- CO = Carbon monoxide. Selected carbon monoxide background concentrations are based on measurements at the Yosemite National Park – Turtleback Dome monitoring station.
- NO_2 = Nitrogen dioxide. Selected nitrogen dioxide background concentrations are based on measurements at the Alamo Lake State Park monitoring station.
- SO_2 = Sulfur dioxide. Selected sulfur dioxide background concentrations are based on measurements at the Alamo Lake State Park monitoring station. Please note that in 2010 the EPA discontinued regulation of the standards for annual and 24-hour averaging periods for SO_2; however, values were included for completeness of the table and for comparison to the NvAAQS annual and 24-hour standards.
- PM_{10} = Particulate matter 10 microns or less in diameter. Selected PM_{10} background concentrations are the current NDEP-recommended values for air quality permitting; concentrations are based on measurements at the Great Basin National Park – Lehman Caves monitoring station. Please note that in 2006 EPA and BAPC discontinued regulation of a PM_{10} annual standard.
- $PM_{2.5}$ = Particulate matter 2.5 microns or less in diameter. Selected $PM_{2.5}$ background concentrations are the current NDEP-recommended values for air quality permitting; concentrations are based on measurements at the Jarbidge Wilderness Area monitoring station.

5 For $PM_{2.5}$, the value 15 µg/m³ was promulgated as the Nevada annual standard in May 2014.

Air Sciences following the EPA Meteorological Monitoring Guidance for Regulatory Modeling Applications document EPA-454/R-99-005 (EPA 2000) and Quality Assurance Handbook for Air Pollution Measurement Systems Volume IV document EPA-454/D-06-001 (EPA 2008a). Quality assurance review of the meteorological monitoring for the Gold Rock Mine Project was conducted and documented compliance with the monitoring guidance (Air Sciences 2015).

Building downwash effects were calculated for all buildings located near the proposed project's point sources, using USEPA's Building Profile Input Program PRIME algorithms in AERMOD (Version 04274) (EMA 2014b). Peak impacts were predicted at receptors on the fenced mine area boundary.

The project has few stationary thermal emission sources (two diesel emergency generators, space and water heaters, a retort, a furnace, and a carbon regeneration kiln), and the tallest stack is not anticipated to be higher than 55 feet tall. Thus, the highest modeled ambient concentrations from each of the proposed project's emitted air pollutants were expected to be located on, or adjacent to, the modeled mine area boundary receptors. To capture the highest modeled concentrations from each type emission source, the protocol proposed the following finely spaced receptor grids near the fenced mine area boundaries, with coarser grids further out from the fenced mine area boundaries. Receptors were placed beyond the mine area boundary out to 3 kilometers. Receptor spacing of 50-, 100-, and 250-meters was used to capture the maximum potential impacts (EMA 2014b).

The modelling was conducted to include those impacts from the Proposed Action plus the only nearby emissions source, the Pan Mine (EMA 2014b), which is located approximately 5 miles northwest of the proposed Gold Rock Mine Project, at the northern end of the Pancake mountain range.

Emission estimates were not prepared for two other criteria pollutants: O_3 and Pb. Ozone is not a primary air pollutant that would be emitted directly by the proposed project, or by most other air pollution sources. Instead, it is principally created from the photochemical reaction of NO_X and VOCs in the air under direct exposure to sunlight. Modeling for O_3 formation and transport is a highly complex and resource intensive exercise, and is typically conducted only to guide the choice of strategies to correct a monitored O_3 problem in an area not attaining the NAAQS for O_3 (Appendix W to 40 CFR Part 51). The Plan area is classified as in attainment for O_3 (NDEP 2013b). Accordingly, although the Project's emissions of NO_X and VOCs were estimated, quantitative modeling for ambient O_3 was not undertaken (EMA 2014b).

As noted in Section 3.7, with the phasing out of leaded gasoline in the 1970s, lead is now an air pollutant emitted in substantial quantities only from certain facilities, such as lead smelters, refiners, and recyclers (EMA 2014b). The proposed project is not such a facility. Because lead is present in all crustal materials, Midway has conducted hundreds of inductively coupled plasma (ICP) metals analyses of whole rock composite samples of potential Gold Rock Mine waste rock and ore. These analyses have an average lead concentration of 10.0 mg/kg (ppmw). Assuming a very conservative 3-month rolling average proposed project PM_{10} ambient air concentration of 50 $\mu g/m^3$ (the annual PM_{10} NAAQS) from emission of these crustal rock materials, the resulting ambient lead concentration would be less than 0.001 $\mu g/m^3$, which is only 0.67 percent of the 0.15 $\mu g/m^3$ (3-month rolling average) lead NAAQS standard. Therefore, the proposed project emissions of lead would not cause or contribute to an exceedance of the lead NAAQS, and no ambient air modeling for lead was undertaken (EMA 2014b).

Estimated modeled ambient concentrations, summed with background monitoring concentrations to reflect estimated total off-site impacts for the project, are summarized in Table 4.7-10 and Table

4.7-11. These predicted total off-site concentrations, using modeled values plus either the NDEP-recommended permitting values or the more conservative representative background concentrations greater than zero, would be less than applicable NAAQS (Table 4.7-10) and NvAAQS (Table 4.7-11).

Even though a PSD analysis is not expected to be required in the air permitting process that Midway would undertake upon approval of the Plan of Operations, a comparison of the PSD Class II increments was reviewed as part of this air quality analysis. With the exception of 24-hour $PM_{2.5}$, the modeled concentrations are below the current EPA Class II Increments. For 24-hour $PM_{2.5}$, the modeled concentrations are below NAAQS and NvAAQS. The air quality modeling analysis shows that the maximum predicted impacts would be located along the mine area boundary and therefore only a small localized area may exceed the PSD Class II $PM_{2.5}$ increments. The facility would use Applicant-Committed EPMs noted in Table 2.3-8 and would comply with any conditions established through the permitting process to minimize particulate matter emissions (especially from fugitive sources) and any resulting off-site impacts.

Based on the modeled impacts from the Proposed Action, additional ambient air monitoring is not expected to be required by EPA or NDEP. NDEP installs and maintains monitoring stations in areas where dispersion modeling has shown a need due to exceedances of PSD limits or NAAQS limits. The Proposed Action modeling analysis does not present a sufficient need for additional monitoring to be conducted by NDEP.

Based on the potential emissions and the distance between the Plan Area and the nearest Class I area, the requirement for AQRV analyses such as visibility impairment or sulfur/nitrogen deposition are not anticipated during the air permitting process.

Climate Change

Under the Proposed Action, GHG emissions from project-related permitted processes and mobile sources could contribute to the "greenhouse effect" and increases in temperature (see text in subsection "Greenhouse Gas Emissions" and Table 4.7-5 and Table 4.7-6). Increased temperatures can reduce air quality, because atmospheric chemical reactions proceed faster in warmer conditions (Garfin et al. 2014). Considering direct and indirect emissions including those associated with off-site generation of purchased power (Table 4.7-6), the proposed project would represent approximately 0.14 percent of 2010 statewide gross GHG emissions of 45 million metric tons of CO_2e (NDEP 2012).

4.7.4 Northern Power Line Route Alternative (Alternative 2)

The Northern Power Line Route Alternative would be expected to result in similar impacts to air quality as the Proposed Action, and even though 33 fewer acres of soil would be disturbed under the Northern Power Line Route Alternative, the difference in impacts would not be noticeable when compared to the Proposed Action.

4.7.5 Southern Power Line Route Alternative (Alternative 3)

The Southern Power Line Route Alternative would be expected to result in similar impacts to air quality as the Proposed Action, and even though 34 fewer acres of soil would be disturbed under the Southern Power Line Route Alternative, the difference in impacts would not be noticeable when compared to the Proposed Action.

4.7.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

Under this alternative, there would be a temporary increase in the acreage of disturbance in association with the construction. These impacts would only occur during the construction phase and would not occur throughout the mine life. The Northwest Main Access Route Alternative would be expected to result in slightly higher impacts to air quality as compared to the Proposed Action. Construction of a power transmission line and maintenance road along the Northern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the Northwest Main Access Route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities.

For this alternative, 64 more acres of short-term surface disturbance would occur compared to the Proposed Action. Additional impacts due to road upgrades would increase impacts to air quality when compared to the Proposed Action. This disturbance would be reclaimed. Impacts from long-term surface disturbance that would not be reclaimed would be similar to those described under the Proposed Action.

4.7.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

Under this alternative, there would be a temporary increase in the acreage of disturbance in association with the construction. These impacts would only occur during the construction phase and would not occur throughout the mine life. The Northwest Main Access Route Alternative would be expected to result in slightly higher impacts to air quality as compared to the Proposed Action.

Construction of a power transmission line and maintenance road along the Southern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities. Additional impacts due to road upgrades would increase impacts to air quality when compared to the Proposed Action.

For this alternative, 72 more acres of short-term surface disturbance would occur compared to the Proposed Action. This disturbance would be reclaimed. Impacts from long-term surface disturbance that would not be reclaimed would be similar to those described under the Proposed Action.

4.7.8 Modified County Road Re-Route Alternative (Alternative 6)

The Modified County Road Re-Route Alternative would be expected to result in similar impacts to air quality as the Proposed Action.

Under this alternative, 7 fewer acres would be disturbed by new road construction along the county road re-route. In the future, if White Pine County elects to upgrade the county road re-route, implementing this alternative would disturb 28 acres during road widening activities. In comparison the Proposed Action would result in 29 acres of disturbance due to road construction and widening. Overall, this alternative could result in 1 less acre of long-term disturbance compared to the Proposed Action.

4.7.9 Western Tailings Storage Facility Alternative (Alternative 7)

The Western Tailings Storage Facility Alternative would be expected to result in similar impacts to air quality as the Proposed Action. The Western TSF footprint would cover 403 acres, compared to a 269-acre footprint for the Proposed Action TSF. Although the Western TSF footprint would be larger, this alternative would result in 118 fewer acres of total disturbance than the Proposed Action. However, the larger footprint size in an unreclaimed condition during operations may be more susceptible to wind erosion of dried tailings causing increased dust in the immediate project area. Approximately 420 acres of disturbance would not be reclaimed, including the 334-acre pit expansion. Approximately 39 fewer acres would not be reclaimed when compared to the 458 acres that would not be reclaimed under the Proposed Action.

4.7.10 No Action Alternative (Alternative 8)

The No Action Alternative would not result in an increase in ambient pollutant emissions. No additional impacts or benefits to air quality would be expected to occur beyond the existing or projected pollutant concentrations for ongoing activities in the area. Impacts to air quality from the No Action Alternative would be less than impacts from the Proposed Action.

4.7.11 Preferred Alternative (Alternative 9)

Implementation of the Preferred Alternative would result in types, intensity, and duration of impacts similar to those described under the Proposed Action. However, construction of a power transmission line and maintenance road along the Southern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the Northwest Main Access Route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities. Additional impacts due to road upgrades would increase impacts to air quality when compared to the Proposed Action.

No new road construction would occur along the Modified County Road Re-route, resulting in 7 fewer acres of surface disturbance compared to the Proposed Action. In the future, if White Pine County elects to upgrade the county road re-route, road widening activities would result in 28 acres of surface disturbance. In comparison, the Proposed Action would result in 29 acres of disturbance due to road construction and widening. Overall, the Modified County Road Re-Route could result in 1 less acre of long-term disturbance compared to the Proposed Action.

The Western TSF footprint would cover 403 acres, compared to a 269-acre footprint for the Proposed Action TSF. Although the Western TSF footprint would be larger, construction of the more compact facility layout would result in less total disturbance than the Proposed Action facility layout. However, the larger Western TSF footprint size in an unreclaimed condition during operations may be more susceptible to wind erosion of dried tailings, causing increased dust in the immediate project area. Approximately 420 acres of disturbance would not be reclaimed, including the 334-acre pit expansion. Approximately 39 fewer acres would not be reclaimed when compared to the 458 acres that would not be reclaimed under the Proposed Action.

Overall, 45 fewer acres of surface disturbance would occur under this alternative compared to the Proposed Action, or approximately 1 percent less than the total disturbance under the Proposed Action. The larger Western TSF may be more susceptible to wind erosion of dried tailings during operations, causing increased dust in the immediate project area.

4.7.12 Additional Monitoring and Mitigation

No additional monitoring is required. No mitigation measures are required.

4.8 VEGETATION, INCLUDING NOXIOUS AND NON-NATIVE, INVASIVE WEEDS AND SPECIAL STATUS PLANTS

4.8.1 Analysis Areas

The analysis areas for vegetation are the same as the analysis areas used for soils (Section 4.5.1). The Study Area described in section 3.8 represents approximately 41 percent of the 32,890-acre Proposed Action vegetation analysis area.

4.8.2 Indicators

Indicators for vegetation resources focus on acreage of vegetation community disturbance. For general vegetation resources and noxious and non-native, invasive weeds, indicators focus on the acreage of disturbed areas and the proximity of existing weeds to the disturbance areas. For special status plant species, indicators focus on the acreage of disturbance of potential habitat, as well as the potential for individual take of special status plants. The following factors were considered in determining effects on vegetation resources, including communities, noxious and non-native, invasive weeds, and special status plant species:

- Magnitude of disturbance or loss;
- Biological importance of the resource;
- Uniqueness or rarity of the resource;
- Federal, state, and/or local protection status of the resource; and
- Susceptibility of the resource to disturbance.

4.8.3 Proposed Action (Alternative 1)

Construction

Vegetation

Direct impacts of the Proposed Action to vegetation include the disturbance of approximately 3,550 acres of vegetation in known locations during facility construction and operations and approximately 400 acres of vegetation during exploration activities throughout the Plan area, for

a total of approximately 3,950 acres of surface disturbance. Loss of vegetation would result from pit excavation; construction of the WRDAs, heap leach facility, process facilities and ponds; placement of growth media stockpiles; installation, maintenance and/or replacement of the existing water supply wells and associated infrastructure; construction of the TSF, shop facilities and yards; construction and widening and maintaining of new mine site roads; construction of a 69 kV power transmission line to the Pan Mine; and construction of a segment of new road along the proposed county road re-route.

Table 4.8-1 shows the estimated surface disturbance in known locations within each vegetation community type (Section 3.8; Figure 3.8-1). In total, approximately 3,490 acres of surface disturbance in known locations and exploration activities throughout the Plan area would be reclaimed concurrently and immediately following the end of mining. Several proposed facilities would not be reclaimed, including the expanded pit, one processing pond, the stormwater control facilities, sediment basins, and county road re-route (Figure 2.3-15), resulting in a long-term loss of 458 acres of vegetation. Of the 458 acres that would not be reclaimed, 334 acres disturbed during expansion of the pit would be permanently lost, as bare rock would be exposed. The remaining 124 acres that would not be reclaimed would revegetate through natural processes.

Table 4.8-1 Disturbance by Vegetation Community Type Under the Proposed Action

Vegetation Community Type	Proposed Action Analysis Area (acres)	Proposed Action Long-Term Disturbance[1] (acres)	Proposed Action Long-Term Disturbance, Not Reclaimed[2] (acres)
Great Basin Pinyon-Juniper Woodland	5,746	746	115
Great Basin Xeric Mixed Sagebrush Shrubland	16,440	2,041	158
Human-Altered Areas[3]	433	368	125
Intermountain Basins Big Sagebrush Shrubland	2,022	204	35
Intermountain Basins Big Sagebrush Steppe	251	2	0
Intermountain Basins Greasewood Flat	7	1	<1
Intermountain Basins Mixed Salt Desert Scrub	1,635	191	25
Total	**26,534**	**3,552**	**458**

Notes
Rounding of acreage results in total acreage discrepancies.

1 In addition to this disturbance in known locations, exploration activities throughout the Plan area would result in up to approximately 400 acres of long-term disturbance, which would be reclaimed.

2 The area presented in the column "Proposed Action Long-Term Disturbance, Not Reclaimed (acres)" is a subset of the area presented in "Proposed Action Long-Term Disturbance (acres)". "Long-term Surface Disturbance, Not Reclaimed" would include the 334-acre pit expansion, one 13-acre process pond converted to an evapotranspiration cell, stormwater control facilities, sediment basins, and disturbance associated with the proposed county road re-route construction and widening if White Pine County decides to upgrade the road. In total, 458 acres of surface disturbance would not be reclaimed under the Proposed Action (Figure 2.3-15).
Under all action alternatives, the 334 acres disturbed during expansion of the pit would be permanently lost, as bare rock would be exposed. The remaining areas that would not be reclaimed would revegetate through natural processes. Sediment basins would remain in place to promote the potential post-mining land uses such as livestock grazing and wildlife use. The majority of the run-on diversion structures would also remain in place. The run-on diversion above the TSF and heap would be left in place and would continue to divert flow from the 100-year, 24-hour storm event around the reclaimed heap and process solution ponds.

3 For analysis purposes, a patch of vegetation within the Plan area believed to be a lightning-strike area was included with human-altered communities based on the similarities in vegetative cover.

The majority of surface disturbance, approximately 57 percent, would be in Great Basin Xeric Mixed Sagebrush Shrubland, with 21 percent in Great Basin Pinyon-Juniper Woodland, 10 percent in previously altered areas and the remaining 10 percent occurring in the other vegetation communities. These communities listed above are typical of the Great Basin high desert and are common and widespread throughout and adjacent to the analysis area.

The Proposed Action would likely result in the transition to grass and forb dominated vegetation types in areas following reclamation. It is likely that over the long term shrubs and trees may naturally recolonize disturbed areas. It may take 75 to 100 years for singleleaf pinyon and Utah juniper trees to mature (Barney and Frischknecht 1974). Approximately 10 percent of the analysis area including the process pond, stormwater controls, pit, sedimentation basins, and proposed county road re-route would not be reclaimed and remain unvegetated. Reclamation seed mixtures as provided by the BLM (Table 2.3-7) would be used to establish forage and cover species for livestock grazing, wild horses, and wildlife habitat.

Indirect impacts to vegetation would include the increased potential for noxious and non-native, invasive weed establishment as described in more detail below. Other indirect impacts would include the long-term loss of forage for wildlife, wild horses, and livestock; potential impacts to wildland fire management; and a potential increase of the erosion potential to soils. These indirect impacts to other resources are described further in the appropriate sections of this EIS.

Vegetation in the analysis area could also be indirectly affected by dust caused by mining activities and road travel. Dust contributes to "edge effects"; near roads and construction sites. Dust can coat surrounding vegetation and disrupt photosynthesis, respiration, and transpiration of plants, ultimately leading to decreased vegetation productivity (Coffin 2007; Trombulak and Frissell 2000). In turn, this can decrease vegetation quality and viability beyond the actual footprint of direct disturbance.

Under the Proposed Action, buses or vans may be used to shuttle employees from Ely and/or Eureka to the mine site. Workers also could use private or company-owned vehicles to commute to the mine site. Bulk chemicals and supplies would typically be transported to the site by trucks via US 50 and the main access route from either the east (Ely) or west (Eureka) and the major connecting highways including Interstate 80 (I-80), US 93, and SR 278. Table 2.3-4 describes the number of expected shipments for reagents to the site. Currently, no restrictions on delivery times exist.

Under the Proposed Action, all workers, contractors, vendors, and visitors would be directed to use the main access route from the north or the proposed county road re-route from the south (Figure 1.1-2 and Figure 4.8-1); however, a worker, contractor, vendor, or visitor may choose to approach by other roads that lead to the Plan area. To analyze indirect impacts that road use under the Proposed Action could have on vegetation and wildlife, the BLM identified routes that could be used to access the site. Figure 4.8-1 shows several existing and proposed routes that lead from either US 50 or Duckwater Road to the Plan area. These routes have been assigned route letters A through G. Routes A through E relate to the Proposed Action (Table 4.8-2). Route F relates to the Northwest Main Access Route Alternative, Northern Power Line Route and Route G relates to the Northwest Main Access Route Alternative, Southern Power Line Route (Table 4.8-6).

Observations over time by various BLM staff indicate that the aforementioned routes are used occasionally by local residents or recreationists. Traffic may increase over existing levels if any of the proposed mining or oil and gas projects in the region are approved. No raw road use data are available for these routes; however, the BLM estimated route use related to the Gold Rock Mine Project on these routes based on information in the Plan, estimates for vehicle use based on vehicle logs being maintained during construction of the Pan Mine, information provided by Midway (Snell 2014c; Williams 2014g,h), and an estimate for carpooling used for the Mount Hope Mine (Blankenship 2014). Traffic levels are often described in terms of daily trips. A daily trip consists of a one-way passage on a road. A vehicle traveling to and from a location on the same route would result in two daily trips on that route. Table 4.8-2 presents estimates of project-related

use under the Proposed Action in terms of daily trips. Table 4.8-6 in Section 4.8.6 presents estimates of project-related use under the Northwest Main Access Route alternatives.

Table 4.8-2 Daily Trips Under the Proposed Action

Type of Vehicle	Average Number of Daily Trips Under the Proposed Action									
	Route A		Route B		Route C		Route D		Route E	
	C	O	C	O	C	O	C	O	C	O
vans (v) or busses (b)	6v or 2b	6v or 2b	0	0	0	0	NA	0	0	0
light vehicles	330	262	26	16	6	1 to 2	NA	4	2	1 to 2
medium trucks	0	12	0	0	6	6	NA	0	0	0
heavy trucks	18	12	1 to 2	1 to 2	1 to 2	0	NA	1 to 2	1 to 2	1 to 2
Total	**350-354**	**288-292**	**26-28**	**16-18**	**12-14**	**6-8**	**NA**	**4-6**	**2-4**	**2-4**

Notes:
light vehicles = cars, pickup trucks, SUVs
medium trucks = dual axle or other large supply trucks
heavy vehicles = tractor trailers
Existing roads and proposed county road re-route are shown on 1.1-2.
C = mine construction and exploration phase
O = mine operation and exploration phase
NA = not applicable
This table presents estimates of project-related road use under the Proposed Action in terms of daily trips.
Figure 4.8-1 shows routes A through E noted in this table, along with routes F and G noted in text and Table 4.8-6.
Sources: Midway 2013a; Snell 2014b,c; Williams 2014g,h

For the Gold Rock Mine Project, traffic on Route A would include up to 354 daily trips during construction and up to 292 daily trips during operation. Traffic on Route B would be lower, including up to 28 daily trips during construction and up to 18 daily trips during operations. Traffic on Route C would be even lower, with up to 14 daily trips during construction and up to eight daily trips during operations. Route D would not exist during construction, and would include up to six daily trips during operations. Traffic would be lowest on Route E, where up to four daily trips would occur during both construction and operations (Table 4.8-2).

As indicated in Table 4.8-2, traffic would increase along the main access route. This increased traffic could result in increased edge effects from dust. Edge effects from dust also could increase on routes B, C, D and E, depending on worker, contractor, vendor and visitor traffic use.

Dust control measures would be used during construction and operation. These measures may include use of magnesium chloride or lignin sulfonate. Impacts to vegetation due to use of these compounds is still being researched. A study in north-central Colorado included some shrubland areas dominated by similar genera of plants – rabbitbrush, big sagebrush, shadscale and saltbush. Results from the study indicated that big sagebrush in the vicinity of roads treated with magnesium chloride dust suppressant was not affected. Rabbitbrush had lower percentages of cover along treated roads (Jacobi et al. 2009). The study determined that the effects of magnesium chloride were substantially different between species and between individuals and that additional studies were necessary to fully understand the impacts of dust suppressant applications on vegetation (Jacobi et al 2009). Based on this information, project-related impacts to vegetation from dust control measures would be short-term and limited in extent to the areas immediately adjacent to treated roads.

FIGURE 4.8-1
ROUTES LEADING TO THE PLAN AREA

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 7/18/2017

0 5 10 Miles

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.

Basemap Source: ESRI World Shade Relief Map Service

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Groundwater drawdown due to pumping for mining activities could indirectly impact deep-rooted vegetation within approximately 5 miles of the Easy Junior water supply well. Few of the dominant plant species in the project area are likely to have root systems dependent on stable groundwater levels in the basin-fill aquifer. Riparian vegetation along the dry drainages in and near the Plan area is believed to be supported by localized, discontinuous shallow alluvial aquifers. Farther east at Green Springs the riparian area is believed to be dependent on a different aquifer fed by the mountains east of the spring, and not on the basin-fill aquifer in which the Easy Junior well is believed to be screened. Potential impacts to vegetation are likely to be long-term and limited in areas where drawdown would occur.

The vegetation communities listed in Table 4.8-1 are typical of the Great Basin high desert and are common and widespread throughout and adjacent to the analysis area. Effects to these vegetation communities would be long term.

Noxious and Non-Native, Invasive Weeds

Impacts to vegetative resources from noxious and non-native, invasive weeds would include a potential for the establishment of weeds resulting from disturbance and the removal of approximately 3,950 acres of native vegetation and the introduction/spreading of weeds during construction or during exploration. Noxious weed introductions could indirectly impact vegetation by reducing habitat quality or changing the trophic structure. The potential for noxious weeds to spread would be highest in newly disturbed areas. Once established, weeds could displace native plant species and change the structure of the habitat (Evangelista et al. 2011; DiTomaso 2000). Noxious weeds could also indirectly affect ecosystem function by changing species composition and changing the physical environment by altering burn cycles and erosion rates (Evangelista et al. 2011; DiTomaso 2000).

Indirect impacts resulting from the establishment of noxious and non-native, invasive weeds include a potential decrease in abundance and integrity of native plant communities as a result of the increase in competition from weeds. To avoid or minimize these impacts, Midway would implement Applicant-Committed EPMs outlined in Sections 2.3.16 and 2.3.17. The impacts resulting from the establishment of noxious and non-native, invasive weeds are expected to be long term.

Special Status Plants

Although no special status plant species were recorded during the vegetation surveys there is potential for impacts to special status species habitat. To avoid or minimize these impacts, Midway would implement Applicant-Committed EPMs outlined in Sections 2.3.16 and 2.3.17. Impacts would be long term.

Operations, Maintenance, and Reclamation

Vegetation

Operation and maintenance activities under the Proposed Action would cause short-term and long-term impacts to vegetation resources similar to those identified under the construction phase. Impacts also would occur as a result of active mining operations, continued access for repairs and maintenance, and long-term monitoring during closure.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Short-term or long-term loss or reduction in productivity of vegetation could occur.

During and after mining activities, reclamation activities would include the seeding of disturbed area with appropriate BLM-approved seed mixes (Table 2.3-7). Approximately 3,490 acres would be reclaimed. The seed mix would include both native and non-native species that have been successfully used in reclaiming disturbed areas in the past. Reclamation vegetation would consist mostly of grasses in the short term. Native shrubs, as well as pinyon pine and juniper, would increase with time but it may take 15 to 30 years for sagebrush to mature (BLM 2004c) and 75 to 100 years for singleleaf pinyon and Utah juniper trees to mature (BLM 2004c; Barney and Frischknecht 1974).

Up to 458 acres of long-term surface disturbance would occur that would not be reclaimed, including the 334-acre pit expansion, 82 acres of stormwater controls, 7 acres of road construction, and up to 22 acres of possible road widening. Impacts to vegetation in areas that would not be reclaimed would be long term. One hundred, fifty-eight acres (32 percent of the area of long-term surface disturbance that would not be reclaimed) would occur in human altered areas. The remaining long-term disturbance that would not be reclaimed would include 114 acres of permanent disturbance in pinyon-juniper woodland, 158 acres in mixed sagebrush shrubland, 35 acres in big sagebrush, less than one acre in greasewood flat, and 25 acres in mixed salt desert shrub. These vegetation communities are common and widespread throughout the area.

The reclamation plan (Section 2.3.16) 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.

Noxious and Non-Native, Invasive Weeds

Impacts to vegetative resources from noxious and non-native, invasive weeds would include a potential for the establishment of weeds resulting from continued disturbance and the removal of native vegetation and the introduction/spreading of weeds during operations, maintenance, and reclamation. Indirect impacts resulting from the establishment of noxious and non-native, invasive weeds includes a potential decrease in abundance and integrity of native plant communities as a result of the increase in competition from weeds. To avoid or minimize these impacts, Midway would implement the Applicant-Committed EPMs outlined in Sections 2.3.16 and 2.3.17. The impacts resulting from the establishment of noxious and non- native, invasive weeds during operations, maintenance, and reclamation are expected to be long term.

Special Status Plants

Direct and indirect impacts of the project on special status plant species would occur. Habitat for special status species was identified within the analysis area. Midway would implement the Applicant-Committed EPMs outlined in Sections 2.3.16 and 2.3.17, minimizing impacts.

4.8.4 Northern Power Line Route Alternative (Alternative 2)

Vegetation

The Northern Power Line Route Alternative would result in similar types, intensity and duration of impacts as described under the Proposed Action, except that this alternative would include 7 fewer miles of power transmission line that would result in approximately 33 fewer acres of long-term disturbance to vegetation compared to the Proposed Action due to the shorter power line route. Table 4.8-3 presents disturbance within vegetation types for the Northern Power Line Route Alternative.

Table 4.8-3 Disturbance by Vegetation Community Type Under the Northern Power Line Route Alternative

Vegetation Community Type	Northern Power Line Route Alternative Analysis Area (acres)	Northern Power Line Route Alternative Long-Term Disturbance [1] (acres)	Northern Power Line Route Alternative Long-Term Disturbance, Not Reclaimed[2] (acres)
Great Basin Pinyon-Juniper Woodland	5,661	728	115
Great Basin Xeric Mixed Sagebrush Shrubland	16,366	2,011	158
Human-Altered Areas[3]	433	367	125
Intermountain Basins Big Sagebrush Shrubland	2,019	203	35
Intermountain Basins Big Sagebrush Steppe	245	<1	0
Intermountain Basins Greasewood Flat	7	<1	<1
Intermountain Basins Mixed Salt Desert Scrub	1,629	188	25
Total	**26,361**	**3,499**	**458**

Notes:

1 In addition to this disturbance in known locations, exploration activities throughout the Plan area would result in up to approximately 400 acres of long-term disturbance, which would be reclaimed.

2 The area presented in the column "Northern Power Line Route Alternative Long-Term Disturbance, Not Reclaimed (acres)" is a subset of the area presented in the column "Northern Power Line Route Alternative Long-Term Disturbance (acres)". Long-term Surface Disturbance (Not Reclaimed) would include the 334-acre pit expansion, one 13-acre process pond converted to an evapotranspiration cell, stormwater control facilities, sediment basins, and disturbance associated with the proposed county road re-route construction and widening if White Pine County decides to upgrade the road. In total, 458 acres of surface disturbance would not be reclaimed under this alternative.

Under all action alternatives, the 334 acres disturbed during expansion of the pit would be permanently lost, as bare rock would be exposed. The remaining areas that would not be reclaimed would revegetate through natural processes. Sediment basins would remain in place to promote the potential post-mining land uses such as livestock grazing and wildlife use. The majority of the run-on diversion structures would also remain in place. The run-on diversion above the TSF and heap would be left in place and would continue to divert flow from the 100-year, 24-hour storm event around the reclaimed heap and process solution ponds.

3 For analysis purposes, a patch of vegetation within the Plan area believed to be a lightning-strike area was included with human-altered communities based on the similarities in vegetative cover.

Noxious and Non-Native Invasive Weeds

Impacts from noxious weeds under the Northern Power Line Route Alternative would be similar to those under the Proposed Action, except that 33 fewer acres would be disturbed.

Special Status Plants

Direct and indirect impacts to special status plant species under this alternative would be similar to those under the Proposed Action.

4.8.5 Southern Power Line Alternative (Alternative 3)

Vegetation

The Southern Power Line Route Alternative would result in similar types, intensity and duration of impacts as described under the Proposed Action, except that this alternative would include a power transmission line that is 6.7 miles shorter and would result in approximately 34 fewer acres of disturbance to vegetation due to the shorter power line. Table 4.8-4 presents areas of disturbance within vegetation types for the Southern Power Line Route Alternative.

Noxious and Non-native, Invasive Weeds

Impacts from noxious weeds under the Northern Power Line Route Alternative would be similar to those under the Proposed Action, except that 34 fewer acres would be disturbed.

Special Status Species

Direct and indirect impacts to special status plant species under this alternative would be similar to those under the Proposed Action.

Table 4.8-4 Disturbance by Vegetation Community Type Under the Southern Power Line Route Alternative

Vegetation Community Type	Southern Power Line Route Alternative Analysis Area (acres)	Southern Power Line Route Alternative Long-Term Disturbance[1] (acres)	Southern Power Line Route Alternative Long-Term Disturbance, Not Reclaimed[2] (acres)
Great Basin Pinyon-Juniper Woodland	5,646	726	115
Great Basin Xeric Mixed Sagebrush Shrubland	16,390	2,029	158
Human-Altered Areas[3]	433	368	125
Intermountain Basins Big Sagebrush Shrubland	2,022	203	35
Intermountain Basins Big Sagebrush Steppe	245	<1	0
Intermountain Basins Greasewood Flat	7	<1	<1
Intermountain Basins Mixed Salt Desert Scrub	1,632	191	25
Total	**26,375**	**3,519**	**458**

Notes

1 In addition to this disturbance in known locations, exploration activities throughout the Plan area would result in up to approximately 400 acres of long-term disturbance, which would be reclaimed.

2 The area presented in the column "Southern Power Line Route Alternative Long-Term Disturbance, Not Reclaimed (acres)" is a subset of the area presented in the column "Southern Power Line Route Alternative Long-Term Disturbance (acres)". Long-term Surface Disturbance (Not Reclaimed) would include the 334-acre pit expansion, one 13-acre process pond converted to an evapotranspiration cell, stormwater control facilities, sediment basins, and disturbance associated with the proposed county road re-route construction and widening if White Pine County decides to upgrade the road. In total, 458 acres of surface disturbance would not be reclaimed under this alternative.
Under all action alternatives, the 334 acres disturbed during expansion of the pit would be permanently lost, as bare rock would be exposed. The remaining areas that would not be reclaimed would revegetate through natural processes. Sediment basins would remain in place to promote the potential post-mining land uses such as livestock grazing and wildlife use. The majority of the run-on diversion structures would also remain in place. The run-on diversion above the TSF and heap would be left in place and would continue to divert flow from the 100-year, 24-hour storm event around the reclaimed heap and process solution ponds.

3 For analysis purposes, a patch of vegetation within the Plan area believed to be a lightning-strike area was included with human-altered communities based on the similarities in vegetative cover.

4.8.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

Vegetation

The Northwest Main Access Route Alternative, Northern Power Line Route would result in similar types, intensity and duration of impacts as described under the Proposed Action. However, under this alternative, a new access route would be established, involving additional surface disturbance during the construction or widening of roads. Construction of a power transmission line and maintenance road along the Northern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities. For this alternative, 64 more acres of long-term surface

disturbance would occur compared to the Proposed Action. This disturbance would be reclaimed. Impacts from long-term surface disturbance that would not be reclaimed would be similar to those described under the Proposed Action. Table 4.8-5 presents areas of disturbance in known locations within vegetation types for the Northwest Main Access Route Alternative, Northern Power Line.

Under the Northwest Main Access Route Alternative, Northern Power Line Route, an additional route would be developed and used as the main access route. This route has been labeled Route F (Figure 4.8-1). Under this alternative, road use would differ from that described under the Proposed Action. All workers, contractors, vendors and visitors would be directed to use the Northwest Main Access Route Alternative, Northern Power Line Route (Route F, Figure 4.8-1) rather than the main access route (Route A) (Figure 4.8-1); however, Routes A through E follow public roads that provide access to public and private lands and would remain open throughout the life of the mine. A worker, contractor, vendor or visitor may choose to approach by one of these other routes that lead to the Plan area. Table 4.8-6 presents the estimated average number of daily trips related to the Gold Rock Mine Project under either of the Northwest Main Access Route alternatives, based on information in the Plan, vehicle logs being maintained during construction of the Pan Mine, information provided by Midway (Snell 2014c; Williams 2014g,h), and an estimate for carpooling used for the Mount Hope Mine (Blankenship 2014).

Under this alternative, traffic on Route F (Figure 4.8-1) would include up to 354 daily trips during construction and up to 292 daily trips during operation. Traffic on Route A would be lower, including up to 28 daily trips during construction and 16 daily trips during operation. Traffic on Route B would be lower still, including up to 8 daily trips during construction and up to 6 daily trips during operations. Traffic on Route C would be even lower, with up to 14 daily trips during construction and up to eight daily trips during operations (similar to use under the Proposed Action). Route D would not exist during construction, and would include up to six daily trips during operations (similar to use under the Proposed Action). Traffic would be lowest on Route E, where up to four daily trips would occur during both construction and operations (similar to use under the Proposed Action) (Table 4.8-6).

Edge effects from dust could occur along the alternative main access route. Edge effects from dust could increase on routes A, B, C, D and E, depending on worker, contractor, vendor and visitor traffic use.

The vegetation communities listed in Table 4.8-5 are typical of the Great Basin high desert and are common and widespread throughout and adjacent to the analysis area. Effects to these vegetation communities would be long term.

Noxious and Non-Native Invasive Weeds

Impacts from noxious weeds under the Northwest Main Access Route Alternative would be similar to those under the Proposed Action, except that this alternative would result in an additional 64 acres of long-term disturbance.

Special Status Plants

Direct and indirect impacts to special status plant species under this alternative would be similar to those under the Proposed Action.

4.8.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

Vegetation

The Northwest Main Access Route Alternative, Southern Power Line Route would result in similar types, intensity and duration of impacts as described under the Proposed Action. However, under this alternative, a new access route would be established involving additional surface disturbance during the construction or widening of roads.

Construction of a power transmission line and maintenance road along the Southern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities. For this alternative, 72 more acres of long-term surface disturbance would occur under this alternative compared to the Proposed Action. This disturbance would be reclaimed. Impacts from long-term surface disturbance that would not be reclaimed would be similar to those described under the Proposed Action. Table 4.8-5 presents areas of disturbance in known locations within vegetation types for the Northwest Main Access Route Alternative, Southern Power Line.

Under the Northwest Main Access Route Alternative, Southern Power Line Route, an additional route would be developed and used as the main access route. This route has been labeled Route G (Figure 4.8-1). Its availability during the construction and operation phases under this alternative is described below.

Under this alternative, route use would differ from that described under the Proposed Action, and would be similar to route use described under the Northwest Main Access Route Alternative, Northern Power Line Route described above and summarized in Table 4.8-6 . Edge effects from dust could occur along the alternative main access route. Edge effects from dust could increase on routes A, B, C, D and E, depending on worker, contractor, vendor and visitor traffic use.

The vegetation communities listed in Table 4.8-5 are typical of the Great Basin high desert and are common and widespread throughout and adjacent to the analysis area. Effects to these vegetation communities would be long term.

Noxious and Non-Native Invasive Weeds

Impacts from noxious weeds under the Northwest Main Access Route Alternative, Southern Power Line Route would be similar to those under the Proposed Action, except that this alternative would result in an additional 72 acres of long-term disturbance.

Special Status Plants

Direct and indirect impacts to special status plant species under this alternative would be similar to those described under the Proposed Action.

Table 4.8-5 Disturbance by Vegetation Community Type Under the Northwest Main Access Route Alternatives

Vegetation Community Type	Northwest Main Access Route Alternative, Northern Power Line Route Analysis Area (acres)	Northwest Main Access Route Alternative, Northern Power Line Route Long-Term Disturbance [1] (acres)	Northwest Main Access Route Alternative, Northern Power Line Route Long-Term Disturbance, Not Reclaimed [2] (acres)	Northwest Main Access Route Alternative, Southern Power Line Route Analysis Area (acres)	Northwest Main Access Route Alternative, Southern Power Line Route Long-Term Disturbance [1] (acres)	Northwest Main Access Route Alternative, Southern Power Line Route Long-Term Disturbance, Not Reclaimed [2] (acres)
Great Basin Pinyon-Juniper Woodland	6,527	747	115	6,366	740	115
Great Basin Xeric Mixed Sagebrush Shrubland	14,673	2,067	155	15,055	2,080	155
Human-Altered Areas [3]	426	368	125	426	368	125
Intermountain Basins Big Sagebrush Shrubland	1,802	221	35	1,871	220	35
Intermountain Basins Big Sagebrush Steppe	185	4	<1	182	4	<1
Intermountain Basins Greasewood Flat	13	<1	<1	13	<1	<1
Intermountain Basins Mixed Salt Desert Scrub	1,598	193	25	1,614	198	25
Total	**25,223**	**3,601**	**490**	**25,527**	**3,610**	**457**

Notes:

1 In addition to this disturbance in known locations, exploration activities throughout the Plan area would result in up to approximately 400 acres of long-term disturbance, which would be reclaimed.

2 The areas presented in the columns "Northwest Main Access Route Alternative, Northern Power Line Route Long-Term Disturbance, Not Reclaimed (acres)" and "Northwest Main Access Route Alternative, Southern Power Line Route Long-Term Disturbance, Not Reclaimed (acres)" are subsets of the areas presented in the columns "Northwest Main Access Route Alternative, Northern Power Line Route Long-Term Disturbance (acres)" and "Northwest Main Access Route Alternative, Southern Power Line Route Long-Term Disturbance (acres)", respectively. Long-term Surface Disturbance (Not Reclaimed) would include the 334-acre pit expansion, one 13-acre process pond converted to an evapotranspiration cell, stormwater control facilities, sediment basins, and disturbance associated with the proposed county road re-route construction and widening if White Pine County decides to upgrade the road. In total, 457 acres of surface disturbance would not be reclaimed under this alternative.

Under all action alternatives, the 334 acres disturbed during expansion of the pit would be permanently lost, as bare rock would be exposed. The remaining areas that would not be reclaimed would revegetate through natural processes. Sediment basins would remain in place to promote the potential post-mining land uses such as livestock grazing and wildlife use. The majority of the run-on diversion structures would also remain in place. The run-on diversion above the TSF and heap would be left in place and would continue to divert flow from the 100-year, 24-hour storm event around the reclaimed heap and process solution ponds.

3 For analysis purposes, a patch of vegetation within the Plan area believed to be a lightning-strike area was included with human-altered communities based on the similarities in vegetative cover.

Table 4.8-6 Daily Trips Under the Northwest Main Access Route Alternatives (Northern or Southern Power Line Route)

Type of Vehicle	Average Number Of Daily Trips Under Northwest Main Access Route Alternative													
	Route F		Route G		Route A		Route B		Route C		Route D		Route E	
	C	O	C	O	C	O	C	O	C	O	C	O	C	O
vans (v) or busses (b)	3v or 1b	0	3v or 1b	0	0	0	0	0	0	0	NA	0	0	0
light vehicles	165	131	165	131	13	8	3	2	3	<1	NA	2	1	<1
medium trucks	0	6	0	6	0	0	0	0	3	3	NA	0	0	0
heavy trucks	9	6	9	6	<1	<1	<1	<1	<1	0	NA	<1	<1	<1
Total	175-177	144-146	175-177	144-146	13-14	7-8	3-4	2-3	6-7	3-4	NA	2-3	1-2	1-2

Notes:
light vehicles = cars, pickup trucks, SUVs
medium trucks = dual axle or other large supply trucks
heavy vehicles = tractor trailers
Existing roads and proposed county road re-route are shown on 1.1-2.
C = mine construction phase
O = mine operation phase
NA = not applicable
This table presents estimates of project-related road use under the Northwest Main Access Route alternatives in terms of daily trips.

Figure 4.8-1 shows routes A through G.

Sources: Midway 2013a; Snell 2014b,c; Williams 2014g,h

4.8.8 Modified County Road Re-Route Alternative (Alternative 6)

Vegetation

The Modified County Road Re-Route Alternative would result in similar types of impacts to those described under the Proposed Action, except that under this alternative, if White Pine County decides to widen this route, 1 less acre of long-term surface disturbance to vegetation that would not be reclaimed would occur compared to the Proposed Action. The slight difference in disturbance from the Proposed Action is due to possible road widening along a greater length of existing county road on the Modified County Road Re-Route. Table 4.8-7 presents areas of disturbance in known locations within vegetation types for the Modified County Road Re-Route Alternative.

Table 4.8-7 Disturbance by Vegetation Community Type Under the Modified County Road Re-route Alternative

Vegetation Community Type	Modified County Road Re-Route Alternative Analysis Area (acres)	Modified County Road Re-Route Long-Term Disturbance[1] (acres)	Modified County Road Re-Route Long-Term Disturbance, Not Reclaimed[2] (acres)
Great Basin Pinyon-Juniper Woodland	5747	746	115
Great Basin Xeric Mixed Sagebrush Shrubland	16917	2,038	155
Human-Altered Areas[3]	433	369	125
Intermountain Basins Big Sagebrush Shrubland	2,063	205	36
Intermountain Basins Big Sagebrush Steppe	251	2	<1
Intermountain Basins Greasewood Flat	17	<1	<1
Intermountain Basins Mixed Salt Desert Scrub	1,842	194	27
Total	**27,268**	**3,552**	**457**

Notes

1 In addition to this disturbance in known locations, exploration activities throughout the Plan area would result in up to approximately 400 acres of long-term disturbance, which would be reclaimed.

2 The area presented in the column "Modified County Road Re-Route Alternative Long-Term Disturbance, Not Reclaimed (acres)" is a subset of the area presented in the column "Modified County Road Re-Route Alternative Long-Term Disturbance (acres)". Long-term Surface Disturbance (Not Reclaimed) would include the 334-acre pit expansion, one 13-acre process pond converted to an evapotranspiration cell, stormwater control facilities, sediment basins, and disturbance associated with the modified county road re-route construction and widening if White Pine County decides to upgrade the road. In total, 457 acres of surface disturbance would not be reclaimed under this alternative.
Under all action alternatives, the 334 acres disturbed during expansion of the pit would be permanently lost, as bare rock would be exposed. The remaining areas that would not be reclaimed would revegetate through natural processes. Sediment basins would remain in place to promote the potential post-mining land uses such as livestock grazing and wildlife use. The majority of the run-on diversion structures would also remain in place. The run-on diversion above the TSF and heap would be left in place and would continue to divert flow from the 100-year, 24-hour storm event around the reclaimed heap and process solution ponds

3 For analysis purposes, a patch of vegetation within the Plan area believed to be a lightning-strike area was included with human-altered communities based on the similarities in vegetative cover.

Noxious and Non-Native Invasive Weeds

Impacts from noxious weeds under the Modified County Road Re-Route Alternative would be similar to those under the Proposed Action, except that 1 less acre of long-term surface disturbance that would not be reclaimed would occur if White Pine County decides to widen the roads.

Special Status Plants

Direct and indirect impacts to special status plant species under this alternative would be similar to those under the Proposed Action.

4.8.9 Western Tailings Storage Facility Alternative (Alternative 7)

Vegetation

Under this alternative, the Western Tailing Storage Facility Alternative would result in similar types, intensity and duration of impacts as described under the Proposed Action. However, a slightly different layout of the mining facilities would result in approximately 118 fewer acres of surface disturbance compared to the Proposed Action, including 80 fewer acres of long-term disturbance that would be reclaimed and 38 fewer acres of long-term disturbance that would not be reclaimed. Table 4.8-8 presents areas of disturbance in known locations within vegetation types for the Western Tailings Storage Facility Alternative.

Noxious and Non-Native Invasive Weeds

Impacts from noxious weeds under the Western Tailings Storage Facility Alternative would be similar to the Proposed Action, except that a smaller overall facility footprint would result in 118 fewer acres of total disturbance, including 80 fewer acres of long-term disturbance that would be reclaimed and 38 fewer acres of long-term disturbance that would not be reclaimed.

Table 4.8-8 Disturbance by Vegetation Community Type Under the Western Tailings Storage Facility Alternative

Vegetation Community Type	Western Tailings Storage Facility Analysis Area (acres)	Western Tailings Storage Facility Alternative Long-Term Disturbance[1,2] (acres)	Western Tailings Storage Facility Alternative Long-Term Disturbance, Not Reclaimed[3] (acres)
Great Basin Pinyon-Juniper Woodland	5,746	599	109
Great Basin Xeric Mixed Sagebrush Shrubland	16,440	1,866	120
Human-Altered Areas[4]	433	357	124
Intermountain Basins Big Sagebrush Shrubland	2,022	272	32
Intermountain Basins Big Sagebrush Steppe	251	2	0
Intermountain Basins Greasewood Flat	7	1	<1
Intermountain Basins Mixed Salt Desert Scrub	1,635	316	36
Total	**26,534**	**3,414**	**420**

Notes:

1 In addition to this disturbance in known locations, exploration activities throughout the Plan area would result in up to approximately 400 acres of long-term disturbance, which would be reclaimed.

2 Under this alternative, an additional 20 acres of soil borrow within the fenced mine area would result in long-term disturbance, which would be reclaimed.

3 The area presented in the column "Western Tailings Storage Facility Alternative Long-Term Disturbance, Not Reclaimed (acres)" is a subset of the area presented in the column "Western Tailings Storage Facility Alternative Long-Term Disturbance (acres)". Long-term Surface Disturbance (Not Reclaimed) would include the 334-acre pit expansion, one 13-acre process pond converted to an evapotranspiration cell, stormwater control facilities, sediment basins, and disturbance associated with the proposed county road re-route construction and widening if White Pine County decides to upgrade the road. In total, 420 acres of surface disturbance would not be reclaimed under this alternative).
Under all action alternatives, the 334 acres disturbed during expansion of the pit would be permanently lost, as bare rock would be exposed. The remaining areas that would not be reclaimed would revegetate through natural processes. Sediment basins would remain in place to promote the potential post-mining land uses such as livestock grazing and wildlife use. The majority of the run-on diversion structures would also remain in place. The run-on diversion above the TSF and heap would be left in place and would continue to divert flow from the 100-year, 24-hour storm event around the reclaimed heap and process solution ponds.

4 For analysis purposes, a patch of vegetation within the Plan area believed to be a lightning-strike area was included with human-altered communities based on the similarities in vegetative cover.

Special Status Plants

Direct and indirect impacts to special status plant species under this alternative would be similar to the Proposed Action, except that the smaller facility footprint would result in 118 fewer acres of total disturbance, including 80 fewer acres of long-term disturbance that would be reclaimed and 38 fewer acres of long-term disturbance that would not be reclaimed.

4.8.10 No Action Alternative (Alternative 8)

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no associated project impacts on vegetation resources excluding the previously authorized exploration activities. Impacts of the previously authorized exploration activities were described in the EA for those activities (BLM 2012j).

4.8.11 Preferred Alternative (Alternative 9)

Vegetation

Implementation of the Preferred Alternative would result in types, intensity, and duration of impacts similar to those described under the Proposed Action. However, construction of a power transmission line and maintenance road along the Southern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the Northwest Main Access Route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities.

Use of the Modified County Road Re-Route would result in similar types of impacts to those described for the county road re-route under the Proposed Action, except that by using the modified county road re-route, if White Pine County decides to widen this route, 1 less acre of long-term disturbance to vegetation would occur compared to the Proposed Action. The slight difference in disturbance from the Proposed Action is due to possible road widening along a greater length of existing county road on the Modified County Road Re-Route.

Construction of a more compact facility layout associated with the Western Tailings Storage Facility Alternative would result in less surface disturbance compared to the Proposed Action facility layout, including 80 fewer acres of long-term disturbance that would be reclaimed and 38 fewer acres of long-term disturbance that would not be reclaimed.

Overall, 45 fewer acres of surface disturbance would occur under the Preferred Alternative when compared to the Proposed Action. Approximately 39 fewer acres would not be reclaimed.

Table 4.8-9 presents areas of disturbance in known locations within vegetation types for the Preferred Alternative.

Under this alternative, the Northwest Main Access Route would follow the Southern Power Line maintenance road and be developed and used as the main access route. This route has been labeled Route G (Figure 4.8-1). Its availability during the construction and operation phases under this alternative is described below.

Table 4.8-9 Disturbance by Vegetation Community Type Under the Preferred Alternative

Vegetation Community Type	Preferred Alternative Analysis Area (acres)	Preferred Alternative Long-Term Disturbance [1,2] (acres)	Preferred Alternative Long-Term Disturbance, Not Reclaimed[3] (acres)
Great Basin Pinyon-Juniper Woodland	6,367	596	109
Great Basin Xeric Mixed Sagebrush Shrubland	15,585	1,879	116
Human-Altered Areas[4]	427	356	124
Intermountain Basins Big Sagebrush Shrubland	1,922	286	32
Intermountain Basins Big Sagebrush Steppe	182	4	<1
Intermountain Basins Greasewood Flat	23	1	<1
Intermountain Basins Mixed Salt Desert Scrub	1,828	319	38
Total	**26,334**	**3,441**	**419**

Notes:

1 In addition to this disturbance in known locations, exploration activities throughout the Plan area would result in up to approximately 400 acres of long-term disturbance, which would be reclaimed.

2 Under this alternative, an additional 20 acres of soil borrow within the fenced mine area would result in long-term disturbance, which would be reclaimed.

3 The area presented in the column "Preferred Alternative Long-Term Disturbance, Not Reclaimed (acres)" is a subset of the area presented in the column "Preferred Alternative Long-Term Disturbance (acres)". Long-term Surface Disturbance (Not Reclaimed) would include the 334-acre pit expansion, one 13-acre process pond converted to an evapotranspiration cell, stormwater control facilities, sediment basins, and disturbance associated with the proposed county road re-route construction and widening if White Pine County decides to upgrade the road. In total, 419 acres of surface disturbance would not be reclaimed under the Preferred Alternative.
Under all action alternatives, the 334 acres disturbed during expansion of the pit would be permanently lost, as bare rock would be exposed. The remaining areas that would not be reclaimed would revegetate through natural processes. Sediment basins would remain in place to promote the potential post-mining land uses such as livestock grazing and wildlife use. The majority of the run-on diversion structures would also remain in place. The run-on diversion above the TSF and heap would be left in place and would continue to divert flow from the 100-year, 24-hour storm event around the reclaimed heap and process solution ponds.

4 For analysis purposes, a patch of vegetation within the Plan area believed to be a lightning-strike area was included with human-altered communities based on the similarities in vegetative cover.

Under the Preferred Alternative, route use would differ from that described under the Proposed Action, and would be similar to route use described under the Northwest Main Access Route Alternative, Southern Power Line Route described above and summarized in Table 4.8-6. Edge effects from dust could occur along the alternative main access route. Edge effects from dust could increase on routes A, B, C, D and E, depending on worker, contractor, vendor, and visitor traffic use.

Construction of a different eastern fence line configuration would create impacts to vegetation similar to those associated with construction of the fence line under the Proposed Action.

The vegetation communities listed in Table 4.8-9 are typical of the Great Basin high desert and are common and widespread throughout and adjacent to the analysis area. Effects to these vegetation communities would be long-term.

Noxious and Non-Native Invasive Weeds

Impacts from noxious weeds under the Preferred Alternative would be similar to those under the Proposed Action, except that 45 fewer acres would be disturbed under this alternative compared to the Proposed Action, minimizing the establishment of noxious and non-native invasive weeds in the proposed project area.

Special Status Plants

Direct and indirect impacts to special status plant species under this alternative would be similar to those described under the Proposed Action, except that 45 fewer acres of total disturbance

and 39 fewer acres of long-term disturbance would not be reclaimed, minimizing the potential for impacts to special status plants.

4.8.12 Additional Monitoring and Mitigation

Vegetation

No additional monitoring measures are required. No mitigation measures are required.

Noxious and Non-Native, Invasive Weeds

No additional monitoring measures are required. No mitigation measures are required.

Special Status Plants

No additional monitoring measures are required. No mitigation measures are required.

4.9 WILDLIFE RESOURCES, INCLUDING MIGRATORY BIRDS AND SPECIAL STATUS WILDLIFE

4.9.1 Analysis Areas

The analysis areas for wildlife and fisheries, including migratory birds and special status species other than eagles, are described below. The analysis areas for eagles also are described below.

The analysis areas were evaluated using a combination of existing resources, including information provided by the BLM, NDOW, USFWS, NNHP, and extensive biological surveys conducted by EcoSynthesis and Wildlife Resource Consultants (WRC) in 2011, 2012, and 2013 (EcoSynthesis and WRC 2012a,b, 2013a). In 2011, EcoSynthesis and WRC conducted baseline biological surveys within the 6,074-acre 2011 Gold Rock Exploration Plan of Operations area (EcoSynthesis and WRC 2012a). In 2012, baseline studies were expanded to cover a 12,400-acre area as the 2011 Gold Rock Exploration Plan of Operations area was expanded (EcoSynthesis and WRC 2012b). In 2013, baseline studies were further expanded to cover approximately 13,405 acres within the Plan area (EcoSynthesis and WRC 2013). Baseline studies also included buffers of the Plan area that varied for different species. The methodologies used for baseline studies are presented in EcoSynthesis and WRC (2012a,b, 2013). As noted in section 3.8, the area covered in these baseline studies is referred to as the Study Area, and the 2013 Study Area (which is the largest and encompasses the areas studied in 2011 and 2012) is shown on Figure 3.8-1.

Wildlife and Fisheries, Including Migratory Birds and Special Status Species Other Than Eagles

Proposed Action

The analysis area for wildlife and fisheries, including migratory birds and special status species other than eagles occurs within:

- The Plan area.
- A 1,968-foot-wide (600-meter-wide) buffer on each side of the power line to the second water supply well to analyze potential indirect impacts of line-of-sight view by Greater Sage-Grouse. For impact analysis purposes, specialists assumed that the proposed second well would be installed 0.5-mile south of the existing Easy Junior water supply well.

- A 1,968-foot-wide (600-meter-wide) buffer on each side of the Proposed Action power line to analyze potential indirect impacts of line-of-sight view by Greater Sage-Grouse.
- Four-mile-wide buffers (2 miles on each side of the center line to analyze potential direct impacts to Greater Sage-Grouse due to noise along segments of the existing and new road on the proposed county road re-route to account for disturbance if, in the future, White Pine County decides to widen the road.
- Four-mile-wide buffers (2 miles on each side of the center line) along the main access route (Route A) and other existing roads that lead to the Plan area to analyze potential direct impacts to Greater Sage-Grouse due to noise.

Northern Power Line Route Alternative

The analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of the Northern Power Line Route Alternative and a 1,968-foot-wide (600-meter-wide) buffer on each side of the power line, instead of the Proposed Action power line route and buffer.

Southern Power Line Route Alternative

The analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of the Southern Power Line Route Alternative and a 1,968-foot-wide (600-meter-wide) buffer on each side of the power line, instead of the Proposed Action power line route and buffer.

Northwest Main Access Route Alternative, Northern Power Line Route

The analysis area is similar to the Proposed Action analysis area, with two modifications:

- Inclusion of the Northern Power Line Route Alternative and a 1,968-foot-wide (600-meter-wide) buffer on each side of the power line along the alternative route, instead of the Proposed Action power line route and buffer
- Addition of a 4-mile-wide buffer (2 miles on each side of the center line) along the Northwest Main Access Route Alternative.

Northwest Main Access Route Alternative, Southern Power Line Route

The analysis area is similar to the Proposed Action analysis area, with two modifications:

- Inclusion of the Southern Power Line Route Alternative and a 1,968-foot-wide (600-meter-wide) buffer on each side of the power line along the alternative route, instead of the Proposed Action power line route and buffer
- Addition of a 4-mile-wide buffer (2 miles on each side of the center line) along the Northwest Main Access Route Alternative.

Modified County Road Re-Route Alternative

The analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of a 4-mile-wide buffer (2 miles on each side of the center line) along a segment of existing BLM 4059 from BLM 4006/CR 1180 to the proposed county road re-route, instead of the 4-mile-wide buffer along the new road segment and unmarked BLM road.

Western Tailings Storage Facility Alternative

The analysis area is the same as the Proposed Action analysis area.

No Action Alternative

The analysis area is the approved, amended 2011 Exploration Plan area.

Eagles

The analysis area for eagles is described below.

Proposed Action

The analysis area occurs within the Plan area plus the area within a 10-mile radius of the Plan area boundary and the Proposed Action power line route.

Northern Power Line Route Alternative

The analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of the area within a 10-mile radius of the Northern Power Line Route Alternative instead of the Proposed Action power line route.

Southern Power Line Route Alternative

The analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of the area within a 10-mile radius of the Southern Power Line Route Alternative instead of the Proposed Action power line route.

Northwest Main Access Route Alternative, Northern Power Line Route

The analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of the area within a 10-mile radius of the Northern Power Line Route Alternative instead of the Proposed Action power line route.

Northwest Main Access Route Alternative, Southern Power Line Route

The analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of the area within a 10-mile radius of the Southern Power Line Route Alternative instead of the Proposed Action power line route.

Modified County Road Re-Route Alternative

The analysis area is the same as the Proposed Action analysis area.

Western Tailings Storage Facility Alternative

The analysis area is the same as the Proposed Action analysis area.

No Action Alternative

The analysis area is the approved, amended 2011 Exploration Plan area.

4.9.2 Indicators

Construction and operation of the project may have short- and long-term impacts on wildlife, including migratory birds and special status species. Of particular interest are potential impacts to big game species including mule deer (Figure 4.9-1); raptors (Figure 4.9-2); Greater Sage-Grouse, a BLM sensitive species with mapped priority habitat management areas in and near the Plan area (Figure 4.9-3, Figure 4.9-4, Figure 4.9-5,

Figure 4.9-6 and Figure 4.9-7). Provided in this section is a detailed impact analysis on wildlife from implementation of the Proposed Action, one of seven action alternatives, or the No Action Alternative.

In general, impacts to wildlife may include avoidance of the Plan area because of habitat removal, degradation/alteration, and fragmentation; increased noise and visual disturbances; and alteration of the existing predator/prey composition. Some wildlife may also acclimate to mine activities and return to use available habitats in and near the Plan area. Wildlife could also be subject to mortality from collisions with vehicles and project infrastructure (e.g., a bird may fly into a building or transmission line). As summarized in Table 4.8-2, traffic is anticipated to increase on the existing main access route, as well as on other roads accessing the Plan area (routes B, C, D, and E, Figure 4.8-1) because workers, contractors, vendors, or visitors may choose to approach by other roads that lead to the Plan area. Impacts are generally expected to be short-term during construction and operations (for the life of the project or until reclamation). Long-term impacts are those that would extend past the active reclamation phase.

The following indicators were considered for analysis of potential impacts to wildlife, including migratory birds and special status species:

- acres of disturbance and the proximity of the Plan area to high value habitat locations such as big game crucial range/migration pathways, raptor nests, and Greater Sage-Grouse leks;
- location of access roads and transmission lines in relation to high value habitat locations;
- number of transmission line poles and other tall structures within line-of sight view from Greater Sage-Grouse leks;
- number of vehicle/wildlife collisions;
- Additional noise disturbance from vehicular traffic and proposed operations in relation to high value habitat locations; and
- acres of various wildlife habitats (e.g., vegetation community types) directly impacted and the juxtaposition of those habitats to the Plan area.

4.9.3 Proposed Action (Alternative 1)

Impacts to wildlife under the Proposed Action are described separately for the construction and operation/maintenance/reclamation phases of the project. Categories of wildlife described below have potential to breed/nest in, forage in, pass through, or otherwise inhabit the analysis area.

Construction

Impacts to wildlife during construction would generally be short-term, lasting only for the duration of the construction phase itself. Longer-term impacts, such as habitat removal (where it may take many years following active reclamation for vegetation to return to pre-disturbance conditions),

would commence during construction but would continue into operations and last for the life of the project.

Total direct land disturbance associated with the Proposed Action would be approximately 3,950 acres. This disturbance would include direct disturbance from facility construction (approximately 3,552 to 3,553 acres in known locations), along with 400 acres of exploration disturbance within the Plan area. Seven vegetation communities habitats would be impacted during construction (Table 4.8-1). Additional information on impacts to vegetation is available in Section 4.8.

When analyzing impacts to wildlife habitat, the 368-acre "human-altered" vegetation community was not considered to be wildlife habitat. As a result, of the 3,553 acres of surface disturbance that would occur in known locations under the Proposed Action, approximately 3,185 acres of that disturbance would occur in six vegetation communities considered to be wildlife habitat: Great Basin Xeric Mixed Sagebrush Shrubland (2,041 acres), Great Basin Pinyon-Juniper Woodland (746 acres), Intermountain Basins Big Sagebrush Shrubland (204 acres), Intermountain Basins Big Sagebrush Steppe (2 acres), Intermountain Greasewood Flat (1 acre), and Intermountain Basins Mixed Salt Desert Scrub (191 acres) (Table 4.8-1). Different species of wildlife use different combinations of these vegetation communities as their habitat. Under other alternatives, area of impact would vary based on the footprint associated with a given alternative.

Dust control measures would be implemented during construction and operation (Table 2.3-8), and may include use of magnesium chloride or lignin sulfonate. The impacts to wildlife due to use of these compounds is still being researched; however, as noted in Sections 4.5.3 and 4.8.3, available research (Jacobi et al. 2009) indicates that impacts to roadside soils would be short-term and limited in areal extent to those areas immediately adjacent to treated roads and areas of road drainage. The research (Jacobi et al. 2009) indicates that big sagebrush would not be affected but that rabbitbrush may have lower percentages of cover along treated roads. Based on this information, potential impacts to vegetation may impact the quality of wildlife habitat immediately adjacent to roadways. Therefore, wildlife, particularly less mobile species that use affected habitats close to roads, may be impacted in the short-term.

Noise-generating activities associated with the Proposed Action include earthmoving, equipment operation, blasting within the mine area or along the Proposed Action power line route, and vehicular traffic. The increased human activity and noise associated with construction activities would likely cause wildlife to temporarily avoid the area and displace into adjacent, undisturbed suitable habitat causing increased competition for resources.

Big Game

The wildlife analysis area for the Proposed Action includes habitat mapped by NDOW as year-round, crucial summer, winter, and crucial winter range for mule deer (Figure 3.9-2 and Figure 4.9-1) and habitat mapped by NDOW as year-round, winter, and crucial winter range for pronghorn antelope (NDOW 2014a) (Figure 3.9-3). The Proposed Action will not impact habitat mapped by NDOW as elk or bighorn sheep range (2014a); therefore, only impacts to mule deer and pronghorn antelope and their habitats are described below. Baseline conditions for big game are described in Section 3.9.2.

Direct impacts could include removal of habitat during surface disturbance, installing fencing within the habitat, and noise and visual disturbances that cause big game to avoid the area in and around the mine. Indirect impacts could include increased competition for forage and other resources as deer and pronghorn are displaced into surrounding areas.

Mapped mule deer crucial summer range accounts for approximately 614 acres of the wildlife analysis area under the Proposed Action. No surface disturbance is planned within mule deer crucial summer range. Mapped crucial winter and winter ranges cover approximately 3,541 acres and 27,087 acres of the wildlife analysis area, respectively. Figure 4.9-1 shows mapped mule deer crucial winter range in relation to other wildlife resources and proposed project features. Mapped year-round range covers approximately 27,279 acres of the wildlife analysis area. Surface disturbance within mapped crucial winter, winter, and year-round ranges per project feature is summarized in Table 4.9-1.

Table 4.9-1 Surface Disturbance In Mapped Mule Deer Range Under the Proposed Action

Type of Mule Deer Range	Project Feature	Proposed Action Long-Term Surface Disturbance By Project Feature (acres)	Proposed Action Long-Term Surface Disturbance[1,2] (acres)
Crucial Winter	Ancillary	300	2,266
	Inter Facility	695	
	North Waste Rock Disposal Area	266	
	Pit	367	
	Process Facility	49	
	Road	121	
	South Waste Rock Disposal Area	114	
	Tailings	269	
	Transmission Line	15	
	Water Pipeline Corridor	71	
Year-round	Ancillary	16	84
	County Road Re-Route – Construct New Road	7	
	County Road Re-Route - Widen Existing Road	15	
	Inter Facility	9	
	Power Poles	25	
	Proposed Action Power Line Service Road	11	
	Road	1	
		Total	**2,350**

Blum et al. (2015) studied habitat use by radio-collared mule deer in and around the Bald Mountain Gold Mine. The Bald Mountain Mine is in a migration corridor for the same mule deer herd that uses the Gold Rock Plan area. The study at the Bald Mountain Mine found that deer avoided the areas of the mine that were subject to the heaviest levels of disturbance (i.e., open pits, heap leach facilities, rock disposal areas) but did use intact patches of habitats adjacent to these features. Because the types of facilities at Gold Rock would be very similar to those at the Bald Mountain Mine, mule deer would likely exhibit a similar pattern of use under the Proposed Action and continue to use intact habitats adjacent to the mine facilities. However, in the vicinity of the Gold Rock Mine Project, NDOW telemetry data collected between January 2009 and February 2014 verify previous NDOW observations that deer from the Ruby deer herd migrate to the Railroad Valley/Northern Part east of Easy Ridge and outside the project area, though individuals and small groups of deer may use the mapped crucial winter range in and near the Plan area. Section 4.9.12 describes mitigation regarding crucial mule deer winter range, including mitigation measures, effectiveness, and effects on other resources.

Pronghorn antelope mapped crucial winter and winter ranges account for approximately 238 acres and 5,518 acres of the Proposed Action wildlife analysis area, respectively. No surface disturbance is planned in mapped pronghorn antelope crucial winter and winter range. Mapped pronghorn antelope year-round range covers approximately 131,242 acres of the analysis area. Surface disturbance to mapped pronghorn antelope year-round range by project feature is summarized below in Table 4.9-2.

Table 4.9-2 Surface Disturbance In Mapped Pronghorn Antelope Range Under the Proposed Action

Pronghorn Antelope Range	Project Feature	Proposed Action Long-Term Disturbance By Project Feature[1]
Year-round	Ancillary	420
	County Road Re-Route - Construct New Road	7
	County Road Re-Route - Widen Existing Road	22
	Heap Leach Pad	430
	Inter Facility	1,026
	North Waste Rock Disposal Area	266
	Pit	367
	Power Poles	23
	Process Facility	74
	Process Pond	25
	Proposed Action Power Line Service Road	10
	Road	180
	Second Water Well and Infrastructure	6
	South Waste Rock Disposal Area	280
	Tailings	269
	Transmission Line	32
	Water Pipeline Corridor	84
	Yard	15
	Total	**3,536**

Notes
1 In addition to this disturbance in known locations, exploration activities throughout the Plan area would result in up to approximately 400 acres of long-term disturbance, which would be reclaimed.

Sources: NDOW 2014a

The Proposed Action calls for use of existing roads to access and travel through the Plan area. The main access route that would be used leads south from US 50 along existing roads into the Plan area (Route A, Figure 4.8-1). The current rate of approximately two vehicular collisions with deer per year along US 50 between mile markers 1 and 31, in and near the analysis area (NDOT 2014) is likely to increase as a result of the increase in traffic as workers and delivery vehicles travel to and from the mine area (Table 4.8-2). The rate of vehicular collision with pronghorn antelope also is likely to increase, especially along US 50. Although NDOW elk range maps (NDOW 2014a) do not overlap the Plan area, the current rate of approximately one vehicular collision per year with an elk along US 50 near the analysis area (NDOT 2014) is also likely to increase as a result of increased mine-related traffic. Therefore, transient elk may be at risk of collision with vehicles associated with the project.

For mule deer specifically, recent NDOW telemetry data indicate that the Plan area is not a major migratory pathway for mule deer; however the data suggest that the Ruby migratory herd crosses US 50 near Green Springs Road (Figure 4.9-1). Based on these data, traffic increases and the

potential for collisions near this intersection are a concern during the migration seasons. Mine-related traffic is expected to range from light to heavy during construction based on existing logs for the Pan Mine. A detailed analysis on the potential effects of increased traffic and big game collisions is described in the next section.

Overall, the Proposed Action would impact big game, particularly mule deer and pronghorn antelope, and their habitats in and near the Plan area over both the short-term and long-term. To avoid or minimize these impacts, Midway would implement reclamation measures as described in 2.3.16 and other Applicant-Committed EPMs outlined in Sections and 2.3.17 and Table 2.3-8.

Small Mammals, Predatory Mammals, and Reptiles

Common small mammals (e.g., cottontail, black-tailed jackrabbit, and ground squirrel), predators (e.g., coyote, fox, and badger), and reptiles (e.g., western fence lizard, western rattlesnake, and gopher snake) are known to occur throughout the analysis area. These species would be impacted by the short-term (for habitats that would be reclaimed and recover quickly) to long-term (for habitats that take many years to recover) loss of habitat and corresponding reductions in local populations. The Proposed Action may also result in the abandonment or loss of eggs/young if construction occurs during the breeding season for any given species.

Smaller, less mobile wildlife could also potentially be killed or injured from work vehicles and equipment during construction activities or from rock or soil displacement during blasting in rocky areas such as along the power line route. There is also potential that some more habituated species, such as coyotes and foxes, could acclimate to the human presence and prey more heavily on small mammals that could be more exposed during ground-disturbing activities. Overall, the Proposed Action would have a short-term impact on common small mammals, predatory mammals, and reptiles from construction activities.

Migratory Birds (Except Eagles)

A variety of resident and migratory bird species have potential to occur in the analysis area, including 15 migratory Birds of Conservation Concern (Table 3.9-2). Approximately 3,550 acres of surface disturbance in known locations could result in potential impacts to birds from the long-term loss of potentially suitable breeding, roosting, and/or foraging habitat. Within the fenced mine area, where habitat would be lost for the life of the project, birds would likely disperse to surrounding habitat. Note that under the Proposed Action, Midway would install 8-foot high chain link fencing around the ponds and place bird balls (or best available technology) on the pond surfaces to discourage birds from accessing the process ponds within the mine area, as required by the NDOW Industrial Artificial Pond Permit (Table 2.3-8). Birds may continue to use habitat on the outskirts of the mine area; however, some may displace farther because of increased human presence and noise.

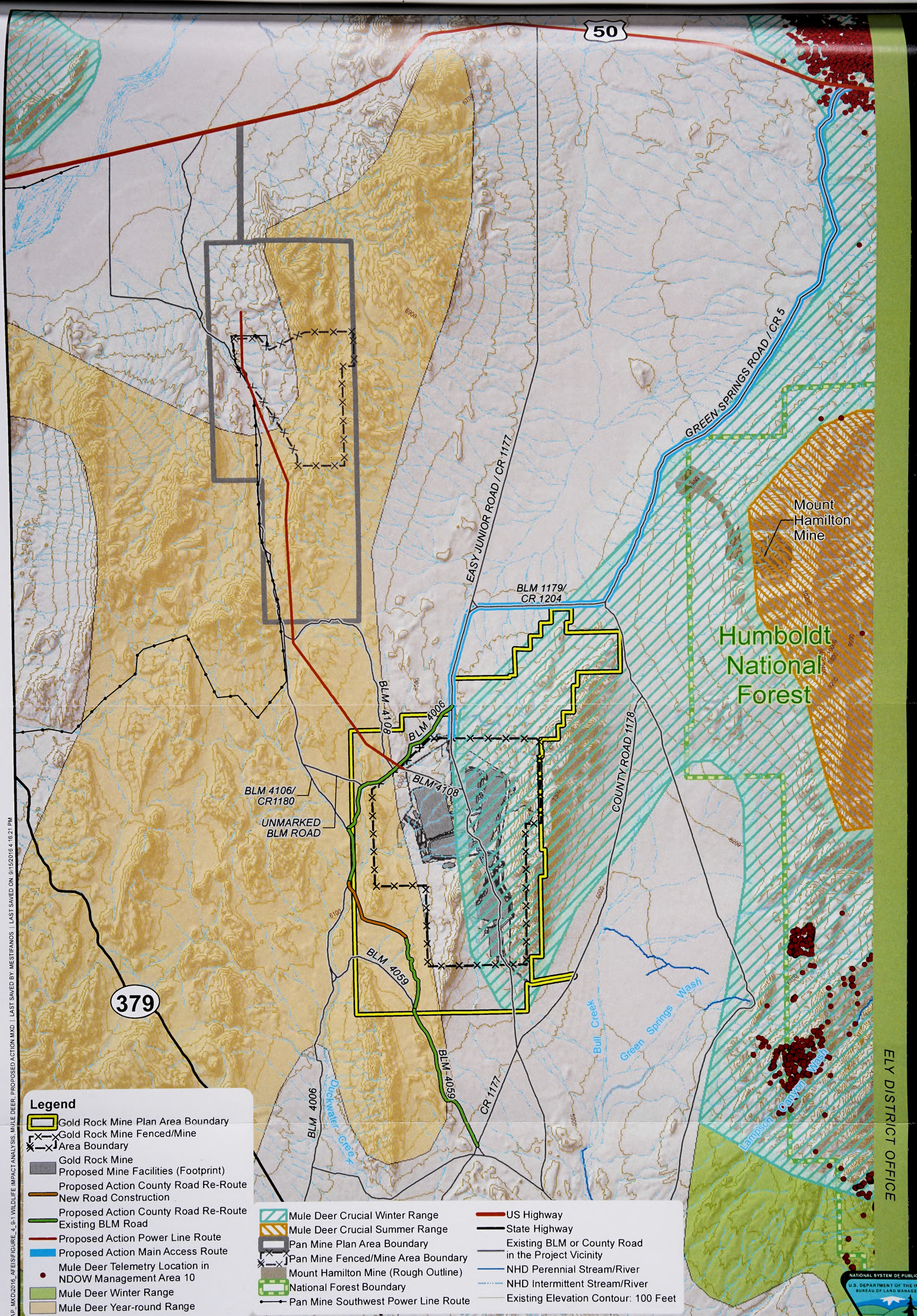
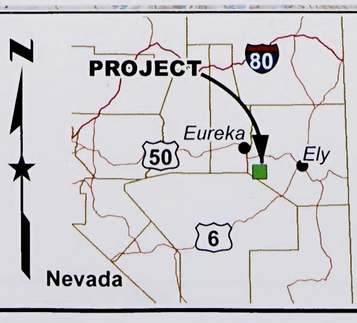


FIGURE 4.9-1
WILDLIFE IMPACT ANALYSIS - MULE DEER
PROPOSED ACTION

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 9/15/2016

0 2 4 Miles



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Basemap Source: ESRI World Shaded Relief Map Service
Mule Deer Range Data Source: Nevada Department of Wildlife (NDOW), provided to ARCADIS on 08/27/2014. Area 10 Mule Deer Movement Data Source: NDOW, records movement observations during 2009-2014, provided to ARCADIS on 04/16/2014.

PATH: Z:\GIS\PROJECTS_ENVC\0001817_GOLDROCK\GIS\ARCMAP_MXD\2016_AFEIS\FIGURE_4_9-1 WILDLIFE IMPACT ANALYSIS_MULE DEER_PROPOSED ACTION.MXD | LAST SAVED BY: MESTIFANOS | LAST SAVED ON: 9/15/2016 4:16:21 PM

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Studies have shown that bird populations, particularly breeding bird populations, may be negatively impacted by elevated noise levels (Reijnen and Foppen 2006; Bayne et al. 2008; Ortega 2012). Increased visual stimuli may also affect bird populations at relatively short distances, but the effects of noise appear to be the most critical factor for birds. Traffic and construction noise during construction could affect bird populations in a number of ways.

Acoustic interference from noise could hamper the detection of mating songs, making it more difficult for birds to establish and maintain territories, attract mates, and/or maintain pair bonds (Reijnen and Foppen 1994; Habib et al. 2007; Swaddle and Page 2007; Ortega 2012). This, in turn, may reduce breeding success in noisy habitats. When begging for food, nestlings may also need to call louder to elicit the desired response from their parents (Leonard et al. 2005; Ortega 2012). As a result, the energetic cost of obtaining food may increase and fitness may decrease (Schroeder et al. 2012). High levels of traffic noise may also interfere with the detection of alarm calls such as those signaling the presence of predators, which could lead to higher rates of predation (Parris and Schneider 2008; Ortega 2012).

Birds may avoid areas close to noise sources and noise may effectively extend habitat disturbance beyond the actual facility footprint. The effects of traffic noise on nesting birds may extend more than 300 m on both sides of roadways (Ortega 2012). McClure et al. (2013) found a negative relationship between recorded traffic noise and the abundance of 13 species of migratory birds at a site in Idaho. In a study of songbirds near energy facilities in Alberta, Canada, songbird density was 1.5 times higher near noiseless facilities than near noise-producing facilities (Bayne et al. 2008), indicating that birds avoided the noisy areas. Francis et al. (2009) found fewer species of birds nesting near natural gas wells with noise-producing compressors than at noiseless control sites.

The effects of noise are species-specific, with some species (e.g., black-chinned hummingbirds and house finches) seeming to prefer noisy sites in the Francis et al. (2009) study and others (e.g., mourning dove and black-headed grosbeak) avoiding these sites. Several species (e.g., gray flycatchers, gray vireos, black-throated gray warblers, and spotted towhees) avoided placing their nests near noise sources in the Francis et al. (2009) study, and the authors concluded that the effects of noise on the breeding bird community were predominately negative. Similar conclusions were reached in a study of the impacts of traffic noise on bird communities in Puerto Rico, where bird species richness and occurrence were lower at sites near highways with noise exceeding 60 decibels on the A-weighted scale (dBA) than at sites with noise levels below 60 dBA (Herrera-Montes and Aide 2011).

A New Mexico study found that impacts of gas well compressor noise on breeding songbird populations in pinyon-juniper habitat were strongest in areas where noise levels were greater than 50 dBA (LaGory et al. 2001). However, moderate noise levels (40 to 50 dBA) also had some effect on bird densities in this study (LaGory et al. 2001). Noise levels in the Plan area are expected to be similar to those modeled for the Pan Mine Project and greater in intensity than those modeled for exploratory drilling, as detailed further in the Greater Sage-Grouse section below.

Birds and their nests may be trampled during construction. To minimize the risk of this occurring, a qualified biologist would conduct nesting surveys for migratory birds if construction activity involving habitat removal needed to occur between March 15 and July 31. For non-raptor migratory birds, nest clearance surveys would cover all potential nesting habitat in and within 600 feet of the area to be disturbed and ground-disturbing activity must be conducted within 7 days of surveys or additional surveys would be required to "re-clear" the area. If nests were found, the "BLM Ely District Recommended Bird Nest Buffer Sizes" document (BLM 2012i) (Appendix 2A)

would be followed to determine the appropriate buffer size for avoidance of activity and/or mitigation, as appropriate.

There are several documented active and inactive raptor nests (prairie falcon and ferruginous hawk nests), as well as those with an unconfirmed status, within and near the Proposed Action analysis area. Land sections in which nests have been found are mapped on Figure 4.9-2. Potential impacts to raptors include the direct, long-term loss of 3,185 acres of potential foraging and nesting habitat (shrubland and woodland). Direct impacts may also include disturbance to nesting raptors due to noise and human activity. Ferruginous hawks in particular are sensitive to human disturbance within 0.5 mile of their nests and are known to preferentially nest away from disturbed areas (Collins and Reynolds 2005). Because raptors are sensitive to human disturbance near their nest sites and may avoid areas near disturbance, the Proposed Action may indirectly result in the short-term loss of an additional 23,644 acres of raptor habitat outside of, but within 0.5 mile of, the project footprint.

To minimize potential impacts on raptors, Midway would have a qualified biologist conduct at least two pre-construction breeding-season raptor nest surveys per year (one in March and one in May), for each year when construction activity was planned to occur between May 1 and July 15. These surveys would take place within potential raptor nesting habitat in and within 0.5 mile of the area to be disturbed. If active raptor nests were found, a 0.5-mile buffer would be applied for avoidance of construction activity between May 1 and July 15, in accordance with the Ely District Resource Management Plan (BLM 2008b). Where a 0.5-mile raptor nest buffer was not feasible, Midway would coordinate with the USFWS, NDOW, and BLM on a case-by-case basis to develop appropriate protective measures for breeding raptors.

The Proposed Action power line and the associated maintenance road would result in the long-term loss of approximately 50 acres of potentially suitable bird habitat. Approximately 53 transmission line poles would be installed in land sections with documented ferruginous hawk nests. All ferruginous hawk nests near the proposed pole locations are either inactive or the status has not been confirmed; none are documented active nests. Should the inactive or unconfirmed nests become active in the future, nesting raptors could attempt to perch or nest on the poles. This behavior could result in an increased risk of electrocution. Birds are also at risk of colliding with power lines, which can be hard to see, especially during inclement weather.

To minimize these potential impacts to raptors, Mount Wheeler Power would use Avian Power Line Interaction Committee (APLIC) avian deterring design measures (APLIC 2006, 2012) or best available technology as noted in Section 2.3.3 and Table 2.3-8.

In summary, impacts to migratory birds within the Plan area are expected to be short-term during construction, except for direct loss of habitat, which would persist beyond the construction phase and be a long-term impact. Implementation of the various Applicant-Committed EPMs described above and in Table 2.3-8 would help to minimize the impacts.

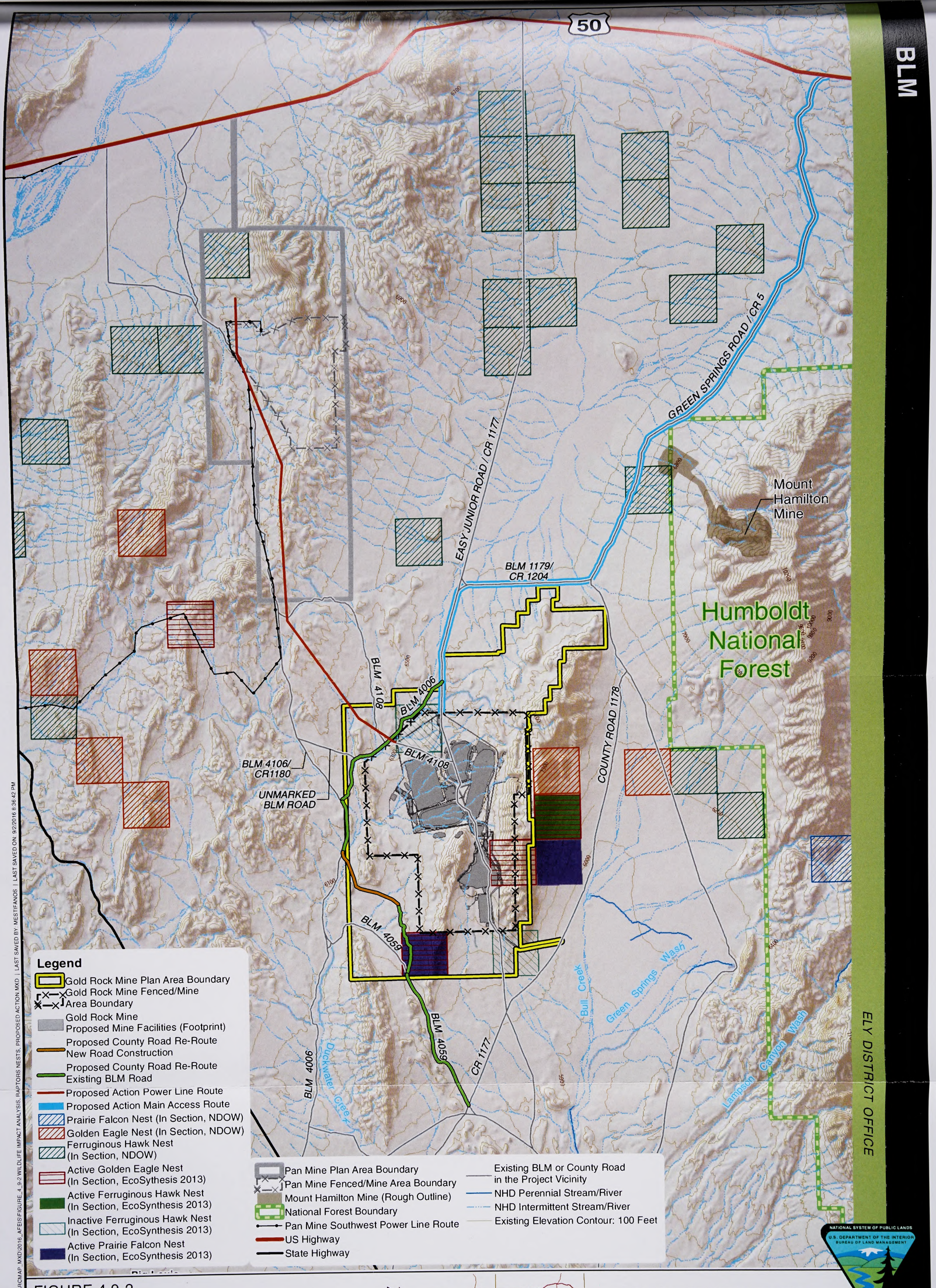

FIGURE 4.9-2
WILDLIFE IMPACT ANALYSIS -
RAPTOR NESTS, PROPOSED ACTION

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 9/2/2016

0 2 4 Miles

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. ORIGINAL DATA WERE COMPILED FROM VARIOUS SOURCES. THIS INFORMATION MAY NOT MEET NATIOAL MAP ACCURACY STANDARDS. THIS PRODUCT WAS DEVELOPED THROUGH DIGITAL MEANS AND MAY BE UPDATED WITHOUT NOTIFICATION.

Basemap Source: ESRI World Shaded Relief Map Service

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Special Status Species

Southwestern Willow Flycatcher

As described in Section 3.9, there is no suitable habitat for the southwestern willow flycatcher in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Proposed Action would have no effect on this species.

Yellow-billed Cuckoo

As described in Section 3.9, there is no suitable habitat for the yellow-billed cuckoo in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Proposed Action would have no effect on this species.

Railroad Valley Springfish

As described in Section 4.2, groundwater pumping and associated drawdown under the Proposed Action would not affect water flow in Big Warm Spring, Little Warm Spring or any other occupied Railroad Valley springfish habitat because these warm springs are hydrothermal and sourced from a deeper aquifer than the aquifer in which the Easy Junior water supply well is screened. Therefore, the Proposed Action would have no effect on this species.

Golden Eagle

Through consultation with the USFWS, a 10-mile buffer was identified as an appropriate survey area to inventory foraging and nesting habitat for golden eagles. NDOW metadata and Ecosynthesis and WRC (2013) field surveys indicate there are several active and historic golden eagle nests within a 10-mile buffer of the Plan area (Figure 4.9-2). Impacts to nesting golden eagles would potentially occur if nesting was attempted or occurred during construction activities. Construction could potentially displace eagles from nests and surrounding foraging habitat. Protective measures outlined in USFWS's 2013 Eagle Conservation Plan Guidance, including nest clearance surveys and inventories as described in the previous section, would be employed prior to and during construction activities.

The Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance (Pagel et al. 2010) states the following:

- "Golden eagle behavior varies among individuals and can be affected by previous experiences. However, some behavioral generalities relative to direct and indirect disturbance include the following:
- agitation behavior (displacement, avoidance, and defense),
- increased vigilance at nest sites,
- change in forage and feeding behavior, and/or
- nest site abandonment.

"Of the preceding behaviors, nest site abandonment constitutes a take under the BGEPA, as it is specifically cited in the definition of 'disturb'. The other behaviors, when considered cumulatively, may be evidence that activities are interfering with normal breeding behavior and are likely to lead to take. Human intrusions near golden eagle nest sites have resulted in the abandonment of the nest; high nestling mortality due to overheating, chilling or desiccation when young are left unattended; premature fledging; and ejection of eggs or young from the nest."

Furthermore, numerous studies have been conducted and published on the interactions between raptors and transmission lines, and raptor electrocution continues to be a concern of state and federal agencies. Transmission lines and structures can also have a beneficial effect on eagles as they can perch, roost, or nest on poles and prey on wildlife in the area, including sensitive species like Greater Sage-Grouse and pygmy rabbits. Approximately 18 transmission line poles would be located in land sections with documented active golden eagle nests. APLIC design standards or best available technology would be implemented to discourage eagle roosting, perching, and nesting on transmission lines and poles (Table 2.3-8).

There are several documented active and inactive golden eagle nests, as well as those with an unconfirmed status, within and near the Proposed Action analysis area. Land sections in which golden eagle nests have been found are mapped on Figure 4.9-2. Impacts to nests and associated habitat as well as displacement associated with construction activities would have short-term impacts on golden eagles during the construction phase. Measures designed to reduce impacts to raptors, including golden eagles, are described in Table 2.3-8.

Greater Sage-Grouse

No Greater Sage-Grouse have been observed inside the Plan area during baseline studies or the ongoing USGS study (EcoSynthesis and WRC 2012 a,b, 2013; Coates et al. 2013, 2015b; Andrle and Coates 2014). Coates et al. (2015b) indicate that Greater Sage-Grouse currently use leks near the Plan area, but generally stay in the vicinity of these leks during the spring, summer, and fall and use habitats to the north and east. Therefore, the following impact analysis applies to leks located outside of, but in the vicinity of, the Plan area.

Impacts to Greater Sage-Grouse from the construction phase of the Proposed Action could include the following:

- Short-term disturbance from noise and human activity
- Long-term habitat loss, alteration, and fragmentation
- Short-term direct mortality from construction equipment (along the proposed main access route/transmission line ROW)
- Short-term direct mortality from vehicle collisions (along the proposed main access route)
- Short-term potential for increased predation by ravens

During the construction phase, Greater Sage-Grouse could be subject to short-term disturbance from noise and human activity, which may cause them to temporarily avoid construction areas. Acoustic communication is important in the reproductive behaviors of Greater Sage-Grouse. There is evidence that the acoustic displays produced by males on leks facilitate reproduction in at least two ways:

- Females use these vocalizations to find leks within the habitat.
- After arrival at a lek, there is evidence that females use male vocalizations (and other aspects of male display) to choose a mate (Upper Green River Basin Sage-Grouse Working Group 2007).

Anthropogenic noise in Greater Sage-Grouse habitat may mask vocalizations produced by males, interfering both with females' ability to locate leks and to choose mates (Blickley 2013; Blickley et al. 2012a). Increased noise levels near leks that repeatedly disturb birds may lead to males' and females' abandonment of lek sites (Lyon and Anderson 2003; Blickley et al. 2012a). Anthropogenic noise may also affect not only breeding Greater Sage-Grouse but also foraging, nesting, brood-rearing, and wintering Greater Sage-Grouse under some circumstances. Blickley

et al. (2012a) acknowledged that noise at energy development sites tends to be less seasonal and more widespread and thus may affect birds at all life stages.

Under the Proposed Action, project-related traffic on Green Springs Road along the existing main access route is anticipated to be subject to up to 354 daily trips during the construction phase (Table 4.8-2). This increased traffic would result in an increased noise level along this route and could impact Greater Sage-Grouse. To a lesser degree, noise levels could increase and noise impacts could occur along routes B, C, and E during the construction phase, as traffic is anticipated to increase along these routes as well (up to 28 daily trips for Route B, up to 14 daily trips for Route C and up to 4 daily trips for Route E; Table 4.8-2).

Ambient noise levels could increase at lek locations as a result of the noise sources associated with the Proposed Action. The impacts from noise would likely be the greatest if construction took place during the breeding and nesting season. Ten Greater Sage-Grouse leks are located near the Plan area and could potentially be affected by noise from the Proposed Action. These leks include seven active leks, two inactive leks, and one lek with unknown activity status. Figure 4.9-3 shows lek locations, and Table 4.9-3 shows each lek's proximity to the nearest project-related noise-producing activity within the analysis area.

Table 4.9-3 Greater Sage-Grouse Lek Proximity to Nearest Noise-Producing Activity Associated with Proposed Action

Lek Name	Lek Activity Status	Approximate Distance from Project Feature
Monte Cristo West	Inactive	0.01 mile (46 feet) to the south of Proposed Action Main Access Route (CR 1204/BLM 1179)
Seligman Canyon	Active	0.04 mile (194 feet) to the east of Proposed Action Main Access Route (Green Springs Road)
Hoppe Spring West	Inactive	0.35 mile (1,862 feet) to the east of Proposed Action Main Access Route (Green Springs Road)
Belmont Junction Southwest	Active	0.41 mile (2,179 feet) to the west of Proposed Action Main Access Route (Green Springs Road)
Monte Cristo/ Seligman Canyon West	Pending Active	0.47 mile (2,489 feet) to the west of Easy Junior Road/CR 1177
Newark Valley S #2	Active	1.5 miles (7,917 feet) to the east of Easy Junior Road/CR 1177
East Black Point	Active	1.6 miles (8,585 feet) to the west of Proposed Action Power Line Route
Pancake Summit	Unknown	1.8 miles (9,343 feet) to the north of Easy Junior Road/CR 1177
Southwest Pancake Summit	Active	3.2 miles (16,871 feet) to the north of Proposed Action Power Line Route
Cathedral	Active	4.3 miles (22,704 feet) from the Easy Junior Pit

Notes:
* NDOW defines "active" as a lek that had two or more males observed at least twice in the last 5 years. NDOW defines "pending active" as a lek that had two or more males observed only once in the last 5 years.
Sources: NDOW 2013b, 2014a, 2016b; EcoSynthesis and WRC 2013

Site-specific noise modeling or monitoring has not been conducted for the Gold Rock Mine project. Site-specific baseline noise monitoring for Greater Sage-Grouse, which would determine ambient noise levels for leks near the project, would be performed 1 year prior to scheduled start of construction. For the purposes of this analysis, information from other studies was used to estimate ambient noise levels in the absence of site-specific information. These studies include the following:

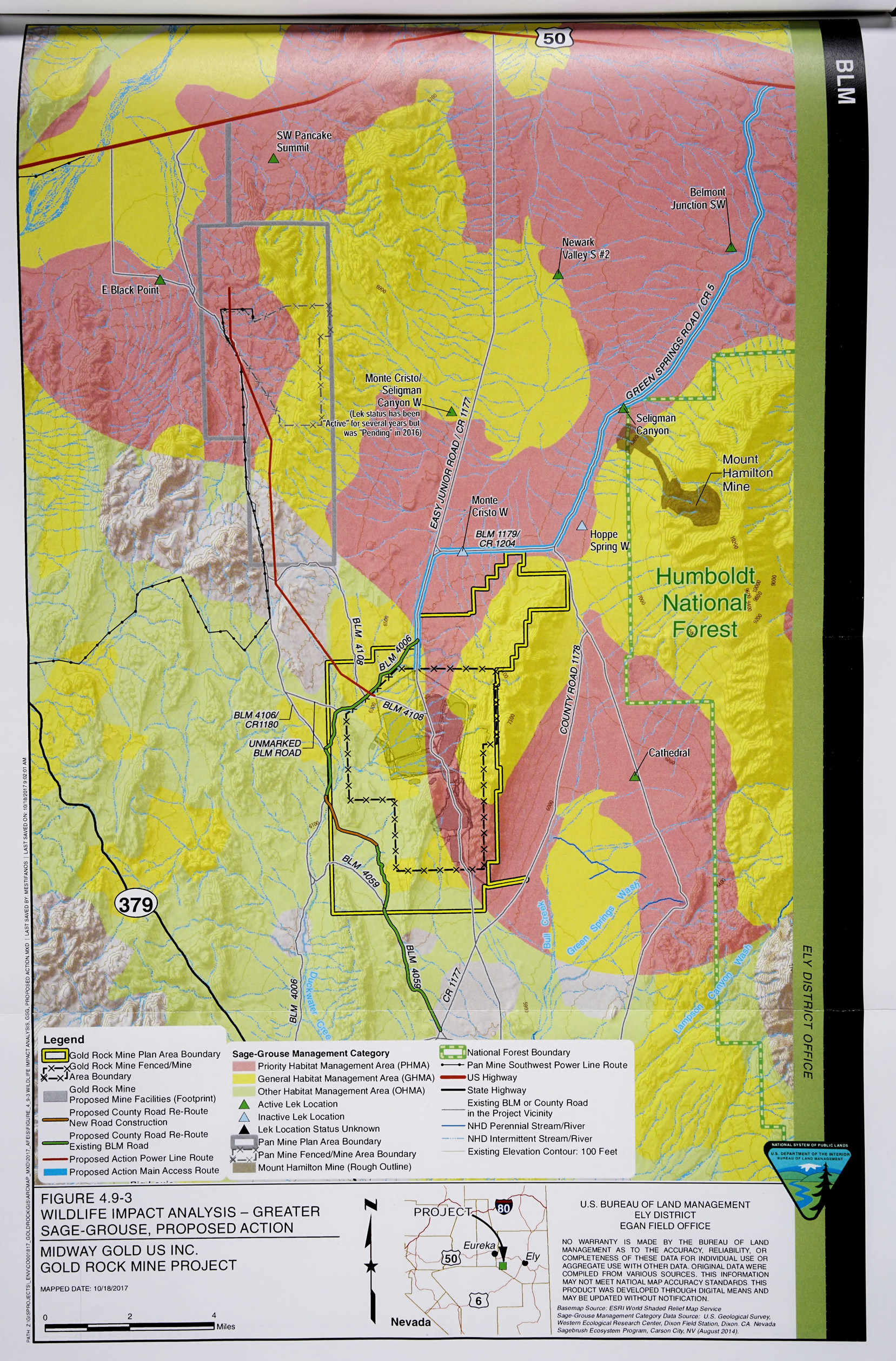
- Patricelli et al. 2013: The authors of this study concluded that pre-development ambient noise values (using a sound pressure level exceeded 90 percent of the time analyzed; L_{90}) for nights and calm mornings (when Greater Sage-Grouse would be on leks) in sagebrush habitat are in the range of 16 to 20 dBA (based on the authors' review of reports and empirical measurements collected in Wyoming).
- Pan Mine: The ambient L_{50} values (sound pressure level exceeded 50 percent of the time analyzed) measured at the East Black Point Lek and Southwest Pancake Summit Lek as part of noise monitoring for the Pan Mine were 24 dBA and 29 dBA, respectively. Ambient L_{90} values for these leks were 18 dBA and 19 dBA, respectively (SWCA 2014).
- NDOW provided ambient noise level (L_{90}) data for Greater Sage-Grouse leks near Austin, Nevada, which were gathered to quantify the noise impacts of a proposed geothermal power plant on leks. Background sound levels from the Austin data ranged from 16.4 to 23.0 dBA (SWCA 2012).

All three information sources suggest that ambient noise levels (L_{90}) at leks near the Gold Rock Mine may be in the range of 16 to 20 dBA. Site-specific baseline noise monitoring for Greater Sage-Grouse near the Gold Rock Mine Project that would be performed 1 year prior to scheduled start of construction would determine the ambient noise levels for the leks that would be affected by the project. Text in Section 4.9.12 describes additional noise monitoring.

Because site-specific data have not yet been collected, it was assumed that noise impacts to Greater Sage-Grouse resulting from the Gold Rock Mine Project would be similar to those described in the Pan Mine EIS, as the two projects are located in the same region with similar topography and would have similar noise sources (BLM 2013c). It was also assumed that the noise impacts from the Gold Rock Mine Project would be of greater intensity than those predicted to occur for exploratory drilling at the site (EDI 2012; SWCA 2012), because full implementation of the project would take longer and use more vehicles and equipment than exploratory drilling.

For the Pan Mine, an increase in noise levels of 10 dBA above ambient was compared against modeled project-related noise levels. The determination of ambient baseline levels and the modeling methods are described in the Final EIS for the Pan Mine Project (BLM 2013c).

At the Pan Mine, noise modeling did not predict any noise exceedances at the closest lek to the mine access road (the Southwest Pancake Summit lek). This lek is located approximately 4,904 feet from the mine access road. The equipment identified in access road travel would include pickup and semi-trucks (similar equipment would be used at the Gold Rock Mine). In 2014, noise monitoring was conducted during construction activities at the Pan Mine. Monitoring was conducted near the Southwest Pancake Summit and East Black Point leks between March 1 and May 15, 2014. Results of the monitoring indicated that a single noise threshold exceedance occurred at one of the leks (East Black Point) for 1 hour. This noise exceedance was 1 dBA over the threshold (SWCA 2014). Audio recordings at the site for that timeframe were not available to explain the source of elevated noise levels; to be conservative, the noise was attributed to mine-related activities (SWCA 2014).


BLM
50
SW Pancake Summit
Belmont Junction SW
Newark Valley S #2
E Black Point
GREEN SPRINGS ROAD / CR 5
Monte Cristo/ Seligman Canyon W
(Lek status has been "Active" for several years but was "Pending" in 2016)
EASY JUNIOR ROAD / CR 1177
Seligman Canyon
Mount Hamilton Mine
Monte Cristo W
BLM 1179/ CR 1204
Hoppe Spring W
Humboldt National Forest
BLM 4108
BLM 4006
BLM 4106/ CR1180
UNMARKED BLM ROAD
COUNTY ROAD 1178
Cathedral
379
BLM 4059
CR 1177
Bull Creek
Green Springs Wash
Lampson Canyon Wash
Duckwater Creek
ELY DISTRICT OFFICE
Legend
Gold Rock Mine Plan Area Boundary
Gold Rock Mine Fenced/Mine Area Boundary
Gold Rock Mine Proposed Mine Facilities (Footprint)
Proposed County Road Re-Route New Road Construction
Proposed County Road Re-Route Existing BLM Road
Proposed Action Power Line Route
Proposed Action Main Access Route
Sage-Grouse Management Category
Priority Habitat Management Area (PHMA)
General Habitat Management Area (GHMA)
Other Habitat Management Area (OHMA)
Active Lek Location
Inactive Lek Location
Lek Location Status Unknown
Pan Mine Plan Area Boundary
Pan Mine Fenced/Mine Area Boundary
Mount Hamilton Mine (Rough Outline)
National Forest Boundary
Pan Mine Southwest Power Line Route
US Highway
State Highway
Existing BLM or County Road in the Project Vicinity
NHD Perennial Stream/River
NHD Intermittent Stream/River
Existing Elevation Contour: 100 Feet
NATIONAL SYSTEM OF PUBLIC LANDS
U.S. DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT
FIGURE 4.9-3
WILDLIFE IMPACT ANALYSIS – GREATER SAGE-GROUSE, PROPOSED ACTION
MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT
MAPPED DATE: 10/18/2017
0
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PROJECT
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Eureka
50
Ely
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Nevada
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. ORIGINAL DATA WERE COMPILED FROM VARIOUS SOURCES. THIS INFORMATION MAY NOT MEET NATIONAL MAP ACCURACY STANDARDS. THIS PRODUCT WAS DEVELOPED THROUGH DIGITAL MEANS AND MAY BE UPDATED WITHOUT NOTIFICATION.
Basemap Source: ESRI World Shaded Relief Map Service
Sage-Grouse Management Category Data Source: U.S. Geological Survey, Western Ecological Research Center, Dixon Field Station, Dixon, CA. Nevada Sagebrush Ecosystem Program, Carson City, NV (August 2014).
PATH: Z:\GIS\PROJECTS_ENV\CO001817_GOLDROCK\GIS\ARCMAP_MXD\2017_AFE\SF\FIGURE_4_9-3 WILDLIFE IMPACT ANALYSIS_GSG_PROPOSED ACTION.MXD | LAST SAVED BY: MESTIFANOS | LAST SAVED ON: 10/18/2017 9:02:01 AM

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Several of the leks in the vicinity of the Gold Rock Proposed Action (including the Monte Cristo West, Seligman Canyon, Hoppe Spring West, Belmont Junction Southwest, and Monte Cristo/Seligman Canyon West leks) are much closer to the existing main access route than the leks studied for the Pan Mine. At the Pan Mine, the closest lek to the mine access road was 4,904 feet away, compared to the Gold Rock Mine Project, where seven leks are within 3,000 feet of the existing main access route (Figure 4.9-3). Two leks (the inactive Monte Cristo West Lek and the active Seligman Canyon Lek) are within 200 feet of the existing main access route (Figure 4.9-3). It is likely that ambient noise levels would be exceeded at these two leks due to truck traffic and equipment hauling along the main access route, based on their distance from the main access route. The active East Black Point lek is located approximately 8,585 feet west of the Proposed Action power line route. Ambient noise levels may be exceeded at the East Black Point lek during construction of the Proposed Action power line due to vegetation clearing activities, power pole installation, and maintenance road construction activities, which could include blasting.

Noise modeling was also conducted at leks that had the potential to be impacted by exploratory drilling activities at the Gold Rock project. A noise assessment was conducted within the 2011 Exploration Plan project area to: 1) calculate the maximum noise levels that would be generated in any one place by exploratory drilling activities and 2) identify resulting noise levels at each of the leks along the access roads, given the attenuation that would result due to distance, topography, and typical atmospheric conditions (EDI 2012). The assumptions and methods of this noise assessment are detailed in the Midway Gold Rock Project Final Environmental Assessment (BLM 2012b).

The authors of the study concluded that noise would exceed 35 dBA (the baseline ambient noise level previously used by the BLM) at four leks due to access road maintenance activities during exploration activities. These included the Monte Cristo West, Hoppe Spring West, Belmont Junction Southwest, and Emigrant leks (Emigrant is no longer considered a valid lek site by NDOW). The study authors also concluded that noise would exceed 35 dBA at three leks due to vehicle traffic on access roads during exploration activities: the Belmont Junction Southwest, Monte Cristo West, and Emigrant leks. No exceedances were predicted to result from on-site exploration activity (EDI 2012).

An addendum to the 2011 Exploration Plan EA noise assessment was prepared to address the 2012 Exploration Amendment project area, and the noise assessment for the 2012 Exploration Amendment used an ambient noise level of 19.5 dBA, rather than the 35 dBA level that was used in the previous analysis (SWCA 2012). The addendum analyzed exploratory drilling noise impacts to the four leks located within 3 miles of the nearest 2012 Exploration Amendment project area border.

Sites chosen for the lek noise analysis were located on the 2012 Exploration Amendment project area boundary and represent the loudest possible project noise sources that could cause disturbance to breeding Greater Sage-Grouse. Assumptions and methods of this noise assessment are described in the 2012 Gold Rock Exploration Project Amendment Preliminary Environmental Assessment (BLM 2012j).

In the noise analysis addendum, project-related noise levels for the maximum equipment use scenario at the project boundary at all four leks were conservatively predicted to exceed the ambient sound level (SWCA 2012). A similar scenario could result under the Proposed Action, because the Proposed Action would include 200 acres of additional exploratory drilling that could take place at or near the Plan area boundary. Noise exceedances associated with project-related exploration would likely be greatest to the Monte Cristo West and Hoppe Spring West leks, which are located within 3 miles of the Plan area boundary (Table 4.9-4); however, both of these leks are currently considered inactive. Other on-site noise sources, such as blasting and equipment

use in the mine pit, would be located more than 3 miles away from any leks and would therefore be less likely to impact Greater Sage-Grouse (Table 4.9-4).

Table 4.9-4 Greater Sage-Grouse Lek Proximity to Nearest On-site Noise-Producing Activity Associated with Proposed Action

Lek Name	Lek Status[1]	Distance in Miles to Plan Area Boundary[2]	Distance in Miles to Mine Pit
Monte Cristo West	Inactive	0.9	3.6
Hoppe Spring West	Inactive	1.2	5.1
Cathedral	Active	3.2	4.3
Monte Cristo/Seligman Canyon West	Pending Active	3.6	6.9
Seligman Canyon	Active	4.1	8.0
Newark Valley South #2	Active	6.2	10.3
Belmont Junction Southwest	Active	8.5	12.4
East Black Point	Active	9.9	12.2
Southwest Pancake Summit	Active	10.7	13.5
Pancake Summit	Unknown	14.2	17.7

Notes:
1 NDOW defines "active" as a lek that had two or more males observed at least twice in the last 5 years. NDOW defines "pending active" as a lek that had two or more males observed only once in the last 5 years.
2 Conservatively estimated as the potential distance to exploratory drilling noise sources.
Sources: NDOW 2013b, 2014a, 2016b; EcoSynthesis and WRC 2013

If ambient noise threshold exceedances under the Proposed Action took place during the breeding season and were unmitigated, they could ultimately result in a decrease in the number of males and females attending the affected leks (Lyon and Anderson 2003; Blickley et al. 2012a). Male and female Greater Sage-Grouse may abandon leks if repeatedly disturbed by vehicle traffic noise on nearby roads (Blickley et al. 2012a; Lyon and Anderson 2003). For example, Blickley et al. (2012a) reported a 73 percent decline in male attendance on leks exposed to traffic noise compared with control leks with no traffic noise. This effect may persist even after sources of noise have ceased (Blickley et al. 2012a).

In related studies, the authors found that traffic noise increased stress hormone levels in Greater Sage-Grouse (Blickley et al. 2012b) and disrupted strutting behaviors of males on leks (Blickley 2013). Therefore, project-related traffic on routes that lead to the Plan area (Figure 4.8-1) has the potential to adversely impact the leks in the analysis area, especially the leks closest to Green Springs Road (the active Seligman Canyon lek and inactive Monte Cristo West lek). Ambient noise threshold exceedances, if unmitigated, are also likely to impact (cause stress and/or displacement of) foraging, nesting, and brood-rearing Greater Sage-Grouse that use habitat in the vicinity of leks. Section 4.9.12 describes additional noise monitoring and, if necessary, mitigation, including possible mitigation measures, effectiveness, and effects on other resources.

The proposed second water well is not anticipated to have any noise impacts on Greater Sage-Grouse. The Easy Junior well is located approximately 3.6 miles from one active lek (Cathedral lek). If a second well is installed, it would be located within 0.5 mile of the existing Easy Junior well, or at least 3.1 miles away from Cathedral lek. At the proposed second well, the pump controls and other equipment that would be located on the surface do not make noise. The well pump would be located at the bottom of the well. If a slight hum from the pump is audible at the surface, close to the wellhead, it is not anticipated to affect Greater Sage-Grouse due to the distance from active leks. Even if Greater Sage-Grouse were able to hear the continuous hum of the pump

emanating from the well, there is evidence that such continuous noise affects Greater Sage-Grouse to a lesser degree than intermittent noise (Blickley et al. 2012a).

Construction of the Proposed Action may have additional impacts on Greater Sage-Grouse, including short-term displacement of individual Greater Sage-Grouse, long-term habitat loss and alteration, direct mortality from construction equipment and vehicle collisions, and increased predation. Construction activities could potentially cause individuals to temporarily or permanently avoid otherwise suitable habitat in the vicinity of these activities. As a result, displaced Greater Sage-Grouse may relocate to unaffected but already occupied habitats where population and competition would increase.

Of the approximately 3,901 acres of proposed surface disturbance, approximately 20 percent would occur in the Great Basin Pinyon-Juniper Woodland vegetation community, which is less suitable habitat for Greater Sage-Grouse. Following proposed reclamation activities, the area initially would support grass- and forb-dominated communities, offering more suitable habitat for Greater Sage-Grouse.

Table 4.9-5 presents areas of potential direct and indirect impacts to PHMA, GHMA, and OHMA as a result of habitat modifications under the action alternatives. These habitat modification activities may fragment suitable sagebrush habitat and could directly and indirectly impact Greater Sage-Grouse.

Under the Proposed Action, surface disturbance would include construction of facility footprints within the Plan area; construction or widening of the Proposed Action county road re-route; installation of the power poles and establishment of the maintenance road for the Proposed Action power line; and could include establishment of the well pad and maintenance road and installation of the power poles for the proposed second well. This surface disturbance would result in direct removal of approximately 1,782 acres of vegetation in PHMA, approximately 1,641 acres of vegetation in GHMA, and approximately 109 acres of vegetation in OHMA. Text in Section 4.9.12 describes voluntary mitigation regarding residual (long-term unreclaimed) direct surface disturbance impacts to PHMA and GHMA, including mitigation measures, effectiveness, and effects on other resources.

Indirect effects to Greater Sage-Grouse could occur due to avoidance of habitat within 1,968 feet (600 meters) of proposed power lines that would cross 3.5 miles of PHMA, 1.3 miles of GHMA, and 0.3 mile of OHMA outside of the Plan area.

Surface disturbance in the Plan area would primarily impact areas that are either mapped as winter habitat for Greater Sage-Grouse or are not mapped as seasonal Greater Sage-Grouse habitat (NDOW 2016a). Surface-disturbing activities that would be located in mapped nesting and brood-rearing habitats include the Proposed Action power line and the distribution line to the water supply well. These activities are not anticipated to impede seasonal movements of Greater Sage-Grouse across the landscape or prevent Greater Sage-Grouse from reaching seasonally important habitats such as the springs in the Railroad Valley/Northern Part. The existing roads that would be used to access the Plan area pass through breeding, nesting, brood-rearing, and winter habitat (NDOW 2016a), and traffic along these roads could impact Greater Sage-Grouse as further described below.

During construction of the Proposed Action, individual Greater Sage-Grouse could collide with moving vehicles along the access routes, and eggs or chicks could be crushed by construction equipment where construction would occur in Greater Sage-Grouse habitat (such as along the power line right-of-way). Green Springs Road, along the existing main access route, is anticipated to be subject to up to 354 daily trips during the construction phase (Table 4.8-2). This increased

traffic would increase the risk for Greater Sage-Grouse collision mortality along this route. To a lesser degree, there could also be collision impacts along routes B, C, and E during the construction phase, as traffic is anticipated to increase along these routes as well (up to 28 daily trips for Route B, up to 14 daily trips for Route C, and up to four daily trips for Route E; Table 4.8-2).

Greater Sage-Grouse, especially juveniles, are vulnerable to vehicle collisions (Aldridge and Boyce 2007). In a study in Montana, vehicle collisions were found to be a more frequent cause of mortality than collisions with wires or fences (Wallestad 1975), and in a study in Idaho, vehicle collisions were the cause of mortality for 4 percent of radio-marked females (Hagen 2005). However, vehicle collisions were not found to be a notable cause of mortality in a Eureka County, Nevada study (Blomberg et al. 2013). Further, Coates et al. (2015b) has not identified mortality in the area due to collision. It is possible that individual Greater Sage-Grouse could be at risk of vehicle collisions, especially during the breeding season when Greater Sage-Grouse activity near leks increases. This could be the case along Green Springs Road on the proposed main access route to the project, which would pass through PHMA and GHMA in close proximity to several leks. To minimize potential impact, the proponent would post and enforce appropriate speed limits within the Plan area to minimize the potential for collisions with wildlife (Table 2.3-8).

Roads can also indirectly impact Greater Sage-Grouse and their habitats in a variety of other ways that include habitat fragmentation, indirect habitat loss, and a potential decline and/or shift in grouse populations (Aldridge and Boyce 2007; MSGWG 2005). New road construction would be minimal under the Proposed Action, but a segment of new road would be constructed as part of the county road re-route, which would impact approximately 7 acres of OHMA. If, in the future, White Pine County decides to widen the county road re-route, approximately 9 acres of GHMA and an additional 10 acres of OHMA would be disturbed. In total, up to 9 acres of GHMA and 17 acres of OHMA would be disturbed during construction and widening of the proposed county road re-route. Text in Section 4.9.12 describes voluntary mitigation regarding residual (long-term unreclaimed) direct surface disturbance impacts to PHMA and GHMA, including mitigation measures, effectiveness, and effects on other resources.

Construction of the power line for the Proposed Action may also impact Greater Sage-Grouse. Wisdom et al. (2011) found that land within 3.1 miles of transmission lines and highways exhibited an elevated rate of lek abandonment. Nonne et al. (2013) found that raven abundance (more on raven predation described in the following paragraphs) increased along the Falcon-Gondor power line corridor in Nevada, both during the construction period and long-term after power line construction activities had ceased. Braun et al. (2002) reported that 40 leks within 0.25 mile of a power line had significantly slower population growth rates than unaffected leks, which was attributed to increased raptor predation. Further, Dinkins (2013) documented Greater Sage-Grouse avoidance of power lines not just during the nesting period, but also during early and late brood-rearing.

The Proposed Action 69-kV power line would be located within 2 miles of the East Black Point and Southwest Pancake Summit leks. The power distribution line from the mine to the existing Easy Junior Well pumphouse and the distribution line from the existing Easy Junior Well pumphouse to the proposed second well would be located more than 3.6 miles from Cathedral lek. Text in Section 4.9.12 describes measures to minimize impacts regarding these two distribution lines, effectiveness of the measures, and effects of the measures on other resources.

Table 4.9-5 Greater Sage-Grouse Habitat Impacts Associated with Proposed Action and Alternatives[1]

Alternative	Proposed Action			Northern Power Line Route Alternative			Southern Power Line Route Alternative			Northwest Main Access Route Alternative, Northern Power Line Route[4]			Northwest Main Access Route Alternative, Southern Power Line Route[4]			Modified County Road Re-route Alternative			Western Tailings Facility Alternative			Preferred Alternative[4]		
Habitat Type	**PHMA**	**GHMA**	**OHMA**	**PHMA**	**GHMA**	**OHMA**	**PHMA**	**GHMA**	**OHMA**	**PHMA**	**GHMA**	**OHMA**	**PHMA**	**GHMA**	**OHMA**	**PHMA**	**GHMA**	**OHMA**	**PHMA**	**GHMA**	**OHMA**	**PHMA**	**GHMA**	**OHMA**
Area of Habitat Impacted During Surface Disturbance[1] (acres)	**1,782**	1,641	109	**1,765**	1,634	109	**1,765**	1,631	119	**1,795**	1,651	116	**1,795**	1,645	148	**1,782**	1,640	109	**1,149**	1,704	539	**1,144**	1,695	578
Area of Habitat Impacted During Surface Disturbance - Associated With Transmission Line From Pan Mine (acres)	**16**	13	1	**0**	6	1	**0**	3	12	**0**	6	1	**0**	3	12	**16**	13	1	**16**	13	1	**0**	3	12
Area of Habitat Impacted During Surface Disturbance - Associated With Main Access Route (acres)	**0**	0	0	**0**	0	0	**0**	0	0	**30**	22	7	**30**	18	26	**0**	0	0	**0**	0	0	**30**	18	26
Area of Existing Habitat Within Analysis Area (acres)	**51,921**	41,411	34,712	**50,139**	41,411	34,712	**50,139**	41,411	34,981	**65,661**	52,161	37,678	**65,659**	52,161	39,080	**51,921**	42,050	34,712	**51,921**	42,050	34,711	**65,659**	52,161	39,080
Percentage of Existing Habitat Within Analysis Area That Would Be Disturbed	**3.4**	4.0	0.3	**3.5**	3.9	0.3	**3.5**	3.9	0.3	**2.7**	3.2	0.3	**2.7**	3.2	0.4	**3.4**	3.9	0.3	**2.2**	4.1	1.6	**1.7**	3.2	1.5
Area of Habitat Potentially Impacted By Project-Related Power Lines Outside the Plan Area[2] (acres)	**2,299**	1,390	149	**517**	752	154	**517**	736	979	**517**	752	154	**517**	736	979	**2,299**	1,390	149	**2,299**	1,390	149	**517**	736	979
Residual Impact Due to Long-Term Surface[3] Disturbance Not To Be Reclaimed (acres)	**301**	121	34	**301**	121	34	**301**	121	34	**301**	121	34	**301**	121	34	**301**	120	35	**268**	110	40	**268**	109	40

Notes:
Acreage of disturbance was calculated using USGS August 2014 Greater Sage-Grouse Habitat Management Area Mapping (USGS 2014f).
Rounding of acreage results in total acreage discrepancies.

1 In addition to this disturbance in known locations, exploration activities throughout the Plan area would result in up to approximately 400 acres of long-term disturbance, which would be reclaimed.

2 Sage-grouse tend to avoid habitat within 1,968 feet (600 meters) of power lines (Braun 1998). The presence of project-related power lines could impact sage-grouse or sage-grouse habitat located within 1,968 feet of project-related power lines. Outside the Plan area, a 600-meter buffer was applied to each side of the transmission line alternatives and the distribution line to a possible second water supply well located within 0.5-mile of the existing Easy Junior well.

3 Long-term Surface Disturbance (Not Reclaimed) would include the 334-acre pit expansion, one 13-acre process pond converted to an evapotranspiration cell, stormwater control facilities, sediment basins, and disturbance associated with the proposed county road re-route construction and widening if White Pine County decides to upgrade the road (Figure 2.3-15). In total, 458 acres of surface disturbance would not be reclaimed under the Proposed Action (419 acres under the Preferred Alternative).

Under all action alternatives, the 334 acres disturbed during expansion of the pit would be permanently lost, as bare rock would be exposed. The remaining areas that would not be reclaimed would revegetate through natural processes. Sediment basins would remain in place to promote the potential post-mining land uses such as livestock grazing and wildlife use. The majority of the run-on diversion structures would also remain in place. The run-on diversion above the TSF and heap would be left in place and would continue to divert flow from the 100-year, 24-hour storm event around the reclaimed heap and process solution ponds.

4 Area of surface disturbance related to the Northwest Main Access Route alternatives and Preferred Alternative includes widening of several existing road segments (including BLM 4006) and construction of a short connector road between the Pan Mine access road and the Pan Southwest Power Line maintenance road.

PHMA = Priority Habitat Management Area
GHMA = General Habitat Management Area
OHMA = Other Habitat Management Area
(Columns have either been bolded or shaded for ease in reading.)

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Common ravens are predators of Greater Sage-Grouse, their eggs, and young, and they occur within the project area. Common ravens are known to benefit from the presence of human-built structures such as roads and power lines, which provide nesting foundations (Kristan and Boarman 2007; Backensto 2010; Bui et al. 2010). Human food sources are also an important factor influencing raven nesting success (Kristan and Boarman 2007). In a study of raven habitat use with respect to Greater Sage-Grouse occupancy near Pinedale, Wyoming, Bui et al. (2010) determined that ravens may use human-built features (e.g., roads) to aid their movement into otherwise undeveloped sagebrush habitat. In that study, ravens were observed flying along the road network (potentially searching for prey or roadkill) and using anthropogenic structures for nesting, especially in otherwise undeveloped habitat. The authors concluded that increased occupancy of areas by pairs of ravens may negatively affect locally breeding populations of Greater Sage-Grouse (Bui et al. 2010). Therefore, an additional potential impact to Greater Sage-Grouse under the Proposed Action is the potential increased predation risk from greater raven occupancy in the project area vicinity.

Pygmy Rabbit

Much of the analysis area contains unsuitable habitat for pygmy rabbits, with the exception of the north-northwestern portion of the Study Area where pygmy rabbit sign was detected during baseline biological surveys (EcoSynthesis and WRC 2013). The construction of facilities within or near suitable habitat could result in direct sagebrush habitat loss. The Proposed Action would result in the direct long-term loss of 2,247 acres of potentially suitable pygmy rabbit habitat.

Pygmy rabbits could also be adversely impacted over the short term by direct removal of burrows and associated mortality (if occupied burrows were destroyed). Furthermore, increased vehicle and equipment traffic on access roads and project roads could lead to mortality of pygmy rabbits due to collisions during the short-term construction phase. Potential impacts resulting from the displacement of individuals also could include nest and burrow abandonment or loss of young. Applicant-committed EPMs include performing pygmy rabbit surveys prior to surface disturbance activities to identify areas of occupied habitat. If occupied habitat were to be encountered, the proponent would coordinate with NDOW and BLM prior to any surface disturbance in that area (Table 2.3-8). Text in Section 4.9.12 describes mitigation regarding pygmy rabbit habitat, including measures, effectiveness, and effects on other resources.

Special Status Bats

Construction activities, especially blasting, could disturb bat roosts and result in the long-term loss of foraging habitat. The Proposed Action would result in the long-term direct loss of 3,184 acres of potential bat foraging habitat. Bats could also be subject to direct mortality if occupied roosts are destroyed during construction of the project. Because no mine shafts or caves have been identified within the analysis area, the Proposed Action is most likely to affect small numbers of individual bats that may be roosting in trees or rock crevices and is unlikely to have population-level impacts due to the lack of significant roosts or hibernacula identified in the analysis area.

Pale and Dark Kangaroo Mouse

Potentially suitable habitat for the pale kangaroo mouse and dark kangaroo mouse is present within the area that would be directly and indirectly impacted under the Proposed Action. Construction activities could destroy suitable and occupied habitat as well as displace individual kangaroo mice. There would be 191 acres of direct removal of potentially suitable habitat for the pale kangaroo mouse and 2,247 acres of direct removal of potentially suitable habitat for the dark kangaroo mouse under the Proposed Action. These impacts would be long-term.

Over the short-term, kangaroo mice using the construction area could also be directly crushed and killed by heavy equipment and vehicles on access roads. O'Farrell (1980) captured a maximum of nine individual dark kangaroo mice in a one-month period on a 2.7-ha (6.7 acre) study area in west central Nevada, indicating that these mice occur at fairly low densities (between one and two individuals per acre) (O'Farrell 1980). This indicates that relatively few individual kangaroo mice may be subject to the short-term direct mortality impacts of the Proposed Action construction phase. To minimize impacts, the proponent would conduct pale kangaroo mouse and dark kangaroo mouse surveys 1 year prior to the start of construction (Table 2.3-8).

Bighorn Sheep

Under the Proposed Action, there would not be any direct disturbance to occupied bighorn sheep range. Because bighorn sheep do not regularly use the area, impacts on this species during the construction phase would be short-term and affect relatively few individuals.

Special Status Raptors

The analysis area contains suitable nesting and foraging habitat for special status raptor species (including western burrowing owls, ferruginous hawks, Swainson's hawks, and peregrine falcons). Noise and human disturbance associated with the construction of the Proposed Action would have a temporary impact on foraging raptors and would temporarily displace them to areas outside the active construction zone.

In addition, construction of the Proposed Action would result in the long-term loss of 3,184 acres of potential raptor foraging habitat (shrubland and woodland), as well as the long-term loss of 746 acres of pinyon-juniper woodland that may provide suitable nesting habitat for raptors such as ferruginous hawks. To put these acreages in context, breeding home ranges for ferruginous hawks in Nevada have been reported as ranging from 1,450 to 1,900 acres (GBBO 2010), so the Proposed Action would directly impact an area roughly equivalent in size to 1 to 2 ferruginous hawk home ranges. Section 4.9.12 describes mitigation regarding ferruginous hawks, including a mitigation measure (encouraging nesting birds to re-locate if possible), its effectiveness, and effects on other resources.

Transmission lines pose an electrocution hazard to birds, particularly raptors, attempting to perch on the poles or lines. Low-flying raptors are also at risk of colliding with power lines, which can be hard to see, especially during inclement weather. To minimize these potential impacts, Midway would implement Applicant-Committed EPMs (Table 2.3-8), including the preparation of a Bird and Bat Conservation Strategy for the Gold Rock Mine Project that would be implemented prior to and during construction activities. Mount Wheeler Power would use APLIC avian deterring design measures or best available technology as noted in Section 2.3.3. These measures could include appropriate spacing between conductors and grounded hardware; use of insulating or cover up materials for perch management; installation of bird flight diverters on the top grounding wire; or perch protection on the top of every pole, which would be created by using the ground/static wire that goes up the pole, bending it to the center of the top of the pole and then upwards another ten to 12 inches.

Throughout the construction and operations phases of the project, construction activities taking place in the vicinity of active raptor nests could disturb and displace adults, ultimately leading to nest failure. To minimize potential impacts on special status raptors, Midway would have a qualified biologist conduct at least two pre-construction breeding-season raptor nest surveys per year (one in March and one in May), for each year when construction activity was planned to occur between May 1 and July 15. These surveys would take place within potential raptor nesting habitat in and within 0.5 mile of the area to be disturbed. If active raptor nests were found, a 0.5-

mile buffer would be applied for avoidance of construction activity between May 1 and July 15. Where a 0.5-mile raptor nest buffer would not be not feasible, Midway would coordinate with the USFWS, NDOW, and BLM on a case-by-case basis to develop appropriate protective measures for breeding raptors (Table 2.3-8). These measures would help to limit the potential for disturbance to special status raptors that may nest in the analysis area.

Overall, the implementation of design features and Applicant-Committed EPMs described above and in Table 2.3-8, and mitigation for ferruginous hawks (Section 4.9.12), would minimize impacts on special status raptors during the construction phase of the Proposed Action.

Special Status Migratory Birds

Impacts to special status migratory bird species during the construction phase of the Proposed Action would be similar to those described for migratory birds in general, and include the effects of displacement, noise, the potential for direct mortality from equipment, vehicles, and power lines, and long-term habitat loss. Table 4.9-6 summarizes the acres of habitat that would be lost under the Proposed Action for special status migratory bird species. Birds of Conservation Concern that may be found in the analysis area are also included in the table. Habitat losses would be long-term. The various Applicant-Committed EPMs (Table 2.3-8) that Midway would implement to protect migratory birds would minimize the impacts of the Proposed Action on these species.

Table 4.9-6 Disturbance In Special Status Migratory Bird Species Habitat Under the Proposed Action

Species	Preferred Habitat in Analysis Area	Proposed Action Long-Term Disturbance [1] (acres)
Pinyon Jay	Great Basin Pinyon-Juniper Woodland	746
Loggerhead Shrike, Black Rosy Finch, Calliope Hummingbird, Fox Sparrow, Gray Vireo, Green-tailed Towhee, Peregrine Falcon, Swainson's Hawk, Virginia's Warbler	May use any of the habitats in the analysis area	3,184
Sage Thrasher, Brewer's Sparrow	Great Basin Xeric Mixed Sagebrush Shrubland, Intermountain Basins Big Sagebrush Shrubland, Intermountain Basins Big Sagebrush Steppe	2,247
Burrowing Owl	Intermountain Basins Mixed Salt Desert Scrub, Intermountain Basins Big Sagebrush Steppe, Intermountain Basins Greasewood Flat	193
Short-eared Owl	Great Basin Xeric Mixed Sagebrush Shrubland, Intermountain Basins Big Sagebrush Shrubland, Intermountain Basins Big Sagebrush Steppe, Intermountain Basins Mixed Salt Desert Scrub, Intermountain Basins Greasewood Flat	1,801

Notes:
1 In addition to this disturbance in known locations, exploration activities throughout the Plan area would result in up to approximately 400 acres of long-term disturbance, which would be reclaimed.

Operations, Maintenance, and Reclamation

Short-term impacts during operations and maintenance of the project would generally last for the life of the project until final reclamation. In general, impacts to wildlife during these phases of the project could include avoidance of the mine area because of habitat fragmentation, visual stimuli, and human presence (including noise). Wildlife would continue to be at risk of collisions with vehicles associated with operations and maintenance of the project and could be periodically disturbed by road maintenance, transmission line maintenance, water pipeline maintenance or replacement, and blasting. The following sections describe specific impacts to the different classes of wildlife during the operations, maintenance, and reclamation phases of the project.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Short-term or long-term loss or reduction in productivity of wildlife habitat could occur.

Big Game

Anticipated impacts to big game during operations, maintenance, and reclamation of the project include avoidance of the mine area due to human presence (including noise), impacts from habitat fragmentation, and potential injury and mortality from mine-related traffic.

Short-term avoidance of the Plan area and mortality from collisions with vehicles (described above under construction impacts) are expected to carry into operations and continue for the life of the project. Note that some deer and pronghorn antelope may acclimate to the presence of the mine and return to inhabit available habitats in and near the Plan area. To minimize impact, the proponent would post and enforce appropriate speed limits within the Plan area to minimize the potential for collisions with wildlife (Table 2.3-8).

Loss of habitat from the Proposed Action during construction would result in a fragmented landscape during operations. In addition, the surface area between mine components (i.e., inter-facility disturbance) is assumed to be subject to disturbance during operation of the mine. As described previously, approximately 3,550 acres of both short- and long-term land disturbance in known locations would result from construction of the Proposed Action. Additional habitat may be disturbed during infrastructure maintenance or replacement activities within existing infrastructure corridors. Long-term unreclaimed disturbance would occur in approximately 31 acres of mule deer year round range, 410 acres of mule deer crucial winter range, and 441 acres of pronghorn year-round range because the pit, ET cell, and surface water control and sediment control structures would not be reclaimed. The area within the footprint of the expanded pit would be permanently lost, as bare rock would be exposed. Anticipated impacts to mule deer and pronghorn antelope habitat are described above for construction-related impacts.

The fragmented landscape resulting from construction of the Proposed Action could impact movements of big game; particularly the Ruby mule deer herd, which uses a migration corridor that crosses US 50 in the northern part of the analysis area (near the intersection of Green Springs Road and US 50). Impacts on mule deer movements would likely be greatest during winters with heavy snow accumulation, when deer would move south through and near the analysis area to reach wintering grounds. Mule deer and pronghorn antelope could also alter their use of the analysis area in response to human presence and noise and move into adjacent, undisturbed habitat; such a change in utilization could result in increased competition for limited resources.

There is concern that big game may enter the haul roads of the mine area, which have high (12-foot), steep berms. Under the Proposed Action, Midway would disturb approximately 180 acres

for haul roads and secondary roads to connect facilities. Therefore, big game may have difficulty exiting the roads and could be at risk of colliding with mine vehicles. Available NDOW telemetry data indicate that the herd does not migrate through the Plan area but does cross US 50 near the proposed main access route (Figure 4.9-1). Big game would be at risk of colliding with vehicles along the main access route and along US 50, where traffic would increase to support mine operations.

Chemicals or solutions associated with gold mines can sometimes be an issue for big game species. However, Midway would comply with all local, state, and federal regulations related to handling potentially toxic substances and limiting their potential for release to the environment. In the event of a spill or release, wildlife that could have entered the mine area could be exposed to hazardous materials. Midway would construct the facilities as zero discharge facilities; install secondary containment features; and implement Applicant-Committed EPMs (Table 2.3-8), the SPCC Plan that would be included in the application for the WPCP, and the Spill Contingency and Emergency Response Plan (Midway 2013a), minimizing the risk of exposure of wildlife to petroleum or hazardous substances. Furthermore, Midway would install 8-foot chain-link fencing around the process ponds, thereby eliminating access to these ponds and minimizing the potential for big game to ingest cyanide that will be present in the mine's process ponds.

Rock mined through the project may contain acid or metals that could be released into the environment and exposed to wildlife after precipitation events. However, these impacts would be unlikely as the WRDAs would be capped with approximately 10 feet of high-carbonate material using waste rock set aside during mining, with an overlying vegetated plant growth media cover to minimize the long-term potential for acid generation and metals leaching.

Small Mammals, Predatory Mammals, and Reptiles

Common small mammals (i.e., cottontail, jackrabbit, and ground squirrel), common predators (i.e., coyote, fox, and badger), and common reptiles (i.e., western fence lizard and sagebrush lizard) known to occur throughout the project area could be displaced into adjacent undisturbed habitat during operations, maintenance, replacement, and reclamation activities. However, some smaller and less mobile wildlife species could potentially be killed or injured during these activities. Impacts to these species from operations, maintenance, replacement, and reclamation activities would be short-term.

Migratory Birds (Except Eagles)

Many of the impacts to birds described for construction would carry over into the operations phase of the project. Migratory birds would be subject to habitat fragmentation, human presence and noise, collision with vehicles and infrastructure, and electrocution from transmission lines. In addition, birds may avoid the mine area and displace into neighboring habitats to nest, forage, and seek shelter. Impacts to migratory birds are expected to be short-term.

In addition to impacts described for construction, birds may be subject to ingestion of toxins and metals. Migratory birds may be exposed to cyanide, which would be present in diluted concentrations in the process ponds. To limit the exposure risk to migratory birds, Midway would construct 8-foot fencing and install bird balls or other best available technology to discourage birds from accessing the ponds as required by the NDOW Industrial Artificial Pond Permit (Table 2.3-8). In addition, petroleum, oil, or lubricants used for vehicles on access roads and operations equipment could leak/spill and travel into migratory bird habitats, particularly during precipitation events. Proper measures would be taken to minimize the potential for spills and leaks of toxic materials into the environment.

The majority of disturbed habitats in the analysis area would be reclaimed at or before the close of mining operations (Section 2.3.16), but would be unavailable to avian species and other wildlife until final stabilization. Reclamation would be designed to establish a productive post-mining environment that would support wildlife, including migratory birds.

Special Status Species

Southwestern Willow Flycatcher

As described in Section 3.9, there is no suitable habitat for the southwestern willow flycatcher in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Proposed Action would have no effect on this species.

Yellow-billed Cuckoo

As described in Section 3.9, there is no suitable habitat for the yellow-billed cuckoo in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Proposed Action would have no effect on this species.

Railroad Valley Springfish

As described in Section 4.2, groundwater pumping and associated drawdown under the Proposed Action would not impact water flow in Big Warm Spring, Little Warm Spring, or any other occupied Railroad Valley springfish habitat due to the distance of these springs from the water supply well. Therefore, the Proposed Action would have no effect on this species.

Golden Eagle

Noise and human disturbance associated with operations, maintenance, and reclamation of the Proposed Action would impact foraging and nesting golden eagles, possibly displacing them to adjacent habitats and limiting the potential for a return to a historical nest site in the vicinity of the mine area. These impacts would be short-term, lasting throughout the life of the project until reclamation.

Reclamation of disturbed areas resulting from activities associated with the Proposed Action would be completed in accordance with BLM and NDEP regulations.

Greater Sage-Grouse

Impacts to Greater Sage-Grouse from the operations, maintenance, and reclamation phases of the Proposed Action could include the following:

- Short-term disturbance from noise and human activity
- Short-term direct mortality from vehicle collisions
- Short-term direct mortality from power line and fence collisions
- Short-term potential for increased predation by raptors and ravens perching on power lines
- Long-term potential for spread of noxious weeds

The impacts to Greater Sage-Grouse from operations, maintenance, and reclamation are expected to be similar in intensity to the impacts described above under construction. Loss of PHMA, GHMA, or OHMA could occur during infrastructure or equipment maintenance or replacement activities located within Greater Sage-Grouse habitat. Active Greater Sage-Grouse

leks could potentially be impacted by human-made noise sources that would continue into the operations, maintenance, and reclamation phases of the Proposed Action.

Other human activities could have adverse effects on Greater Sage-Grouse during the operations, maintenance, and reclamation phases of the project. For example, males and females may abandon leks if repeatedly disturbed by raptors perching on power lines near leks (Ellis 1984), by vehicle traffic on nearby roads (Blickley et al. 2012a; Lyon and Anderson 2003), or by noise and human activity during the breeding season (Braun et al. 2002; Holloran 2005).

Related to the Proposed Action main access route, higher Greater Sage-Grouse mortality rates from vehicle collisions could occur along Green Springs Road, especially during the breeding season when Greater Sage-Grouse activity near leks increases (Nevada Governor's Sage-grouse Conservation Team 2010). The existing main access route to the Plan area (Route A, Figure 4.8-1; Figure 4.9-3) is anticipated to have up to 292 daily trips during the operations phase of the project (Table 4.8-2), which would increase the collision risk for Greater Sage-Grouse over the short-term. Vehicle collisions could also occur along other routes that lead to the Plan area (Routes B, C, D, and E). During the operations phase, there are anticipated to be up to 18, eight, six, and four daily trips on Routes B, C, D, and E, respectively (Table 4.8-2). To minimize potential impact, the proponent would post and enforce appropriate speed limits within the Plan area to minimize the potential for collisions with wildlife (Table 2.3-8).

Overhead power lines may have direct and indirect effects on Greater Sage-Grouse. The wires and structures provide hunting perch sites for predators such as raptors and ravens and may be obstacles for Greater Sage-Grouse during flight (Nevada Governor's Sage-grouse Conservation Team 2010). Several studies suggest that Greater Sage-Grouse and related species instinctively avoid habitat when power lines or other vertical structures are visible from that habitat to avoid predation (Schroeder 2010). One study found that Greater Sage-Grouse tend to avoid habitat located within 1,968 feet (600 meters) of power lines (Braun 1998). By avoiding use of the habitat, the birds lose the benefits of that habitat. Thus, the effective habitat loss and fragmentation created by power lines may extend to an area much greater than the actual power line corridor.

Based on Braun's 1998 findings, the analysis areas for Greater Sage-Grouse included 1,968-foot (600 meter) buffers on project-related power lines to assess direct impacts to sage-grouse and sage-grouse habitat. Under the Proposed Action, project-related power lines outside of the Plan area could affect the use of approximately 2,299 acres of PHMA, approximately 1,390 acres of GHMA, and 149 acres of OHMA, representing a short-term direct and indirect impact: the loss of use of Greater Sage-Grouse habitat (Table 4.9-5). Mount Wheeler Power would implement the BMPs in the APLIC document *Best Management Practices for Electric Utilities in Sage-grouse Habitat* (APLIC 2015) or best available technology, to the extent practicable, to minimize impacts of the power line on Greater Sage-Grouse (Table 2.3-8).

Fences also pose a collision risk to Greater Sage-Grouse. For example, one study in Idaho found 56 Greater Sage-Grouse that had been killed by colliding with fences. Most of these were male Greater Sage-Grouse that collided with fences within 500 meters (1,640 feet) of a lek during the strutting (breeding) season (Stevens et al. 2012). Under the Proposed Action, 3 miles of mine area fence would cross PHMA, 8.3 miles of mine area fence would cross GHMA, and 4.8 miles of mine area fence would cross OHMA. Although no fences would be installed within 500 meters of a known lek, the new fences would still pose a minor to moderate collision risk for Greater Sage-Grouse. Midway would minimize this risk by marking fences within PHMA and GHMA according to NRCS (2012) guidelines to increase their visibility to Greater Sage-Grouse (Table 2.3-8).

Noxious weed and invasive plant introductions could indirectly impact Greater Sage-Grouse over the long-term through a reduction in habitat quality and/or changes in trophic structure. The potential for invasive species to spread would be highest in newly disturbed areas. Once established, invasive plants could displace native plant species and adversely affect the wildlife and insects dependent on that native vegetation, including Greater Sage-Grouse (Evangelista et al. 2011; Davies et al. 2011; DiTomaso 2000). Desirable forage species may be replaced with undesirable species. Noxious weeds and invasive plants could also indirectly affect ecosystem function by changing species composition and changing the physical environment by altering burn cycles and erosion rates (Evangelista et al. 2011; Davies et al. 2011; DiTomaso 2000). The proponent would conduct concurrent reclamation and implement other measures to minimize the introduction and spread of noxious weeds (section 2.3.16 and Table 2.3-8).

Overall, impacts to Greater Sage-Grouse under the Proposed Action would be both short-term and long-term. Human presence and habitat disturbance (including the addition of fences and power lines on the landscape) taking place under the Proposed Action may have an adverse impact on the local Greater Sage-Grouse population.

Pygmy Rabbit

During the operations and maintenance phase of the Proposed Action, pygmy rabbits could continue to be potentially affected by vehicle collisions along the main access route. Up to 292 vehicle trips per day are anticipated during the operations of the Proposed Action (Table 4.8-2), which would pose a threat to pygmy rabbits and other wildlife that may cross roads. The loss of individual pygmy rabbits (a game species in Nevada) would not result in population-level effects. A potential indirect effect of the Proposed Action on pygmy rabbits is the increase in predation risk associated with the newly installed transmission line, which may provide perches and nesting sites for raptors. These impacts would be short-term, as the transmission line would be removed during the reclamation phase of the project.

Special Status Bats

Several special status bat species have suitable foraging and roosting habitat throughout the analysis area, though no known hibernacula are present. The primary impacts to bats during the operations, maintenance, and reclamation phases would include the potential for the ongoing displacement of bats due to human activity (e.g., due to light and noise caused by nighttime mining activities) and the potential for mortality of bats due to cyanide poisoning at the leach ponds.

The proponent would use anti-glare light fixtures with fugitive light control designs to limit the extent to which artificial lighting is visible from adjacent wildlife habitats, and would avoid disturbance within 0.5 mile of underground mine openings unless the mines are surveyed and deemed not important for bats (Table 2.3-8).

Water is crucial to bats inhabiting desert and semi-desert ecosystems and bats may travel many miles to visit reliable sources of drinking water (Taylor 2007). Bats are also attracted to water sources because the water attracts and concentrates their insect prey. The processing ponds that would be constructed under the Proposed Action would provide a new source of water on the landscape that would potentially attract bats as a drinking water source and as foraging habitat. Bats that drink from the processing ponds or fall into the process ponds while foraging may succumb to cyanide poisoning and/or drowning. There have been documented cases of mortalities of bats in process ponds containing cyanide at gold mines (Eisler and Wiemeyer 2004). For example, between 1980 and 1989, 175 bats were found dead at cyanide extraction gold mine mill tailings and processing ponds in California, Nevada, and Arizona, and at a mine in California, a nearby population of Townsend's big-eared bats may have been extirpated as a result of cyanide exposure (Eisler and Wiemeyer 2004).

Midway would install bird balls, hexagonal floating discs, or best available technology on the process pond surfaces to deter wildlife use (Table 2.3-8). Use of these measures is expected to be effective in excluding bats as well as birds because the floating objects are designed to cover the surface of the ponds; discs especially are designed to fit together without gaps. If bats were to be impacted, the potential impact would be short-term, as the ponds would be closed and reclaimed once mining is complete. Midway would work with NDOW to develop suitable environmental protection measures (Table 2.3-8).

Pale and Dark Kangaroo Mouse

During the operations, maintenance, and reclamation phases of the Proposed Action, pale and dark kangaroo mice could be at risk of being killed by collisions with vehicles and maintenance equipment in suitable habitat. These impacts would be short-term, as they would cease after reclamation was completed. Small areas of potentially suitable habitat for these species may also be removed or altered during operations, maintenance, and reclamation, for example, by ongoing weed control activities. A potential indirect effect of the Proposed Action on the pale and dark kangaroo mouse is the increase in predation risk associated with the newly installed transmission line, which may provide perches and nesting sites for raptors and ravens. These impacts would be short-term, as the transmission line would be removed during the reclamation phase of the project.

Bighorn Sheep

No occupied bighorn sheep range would be affected by operations, maintenance, or reclamation activities under the Proposed Action. Individual bighorn sheep may avoid the area of active mining if present in the vicinity, but these impacts would be short-term and affect few individuals in marginal habitat.

Special Status Raptors

During the operations, maintenance, and reclamation phases of the Proposed Action, special status raptor species may be affected by ongoing human presence and may avoid some areas of formerly suitable habitat. Installation of the transmission line would provide a new nesting and perching structure on the landscape, but it would also potentially pose a collision risk. Transmission lines pose an electrocution hazard to birds, particularly raptors, attempting to perch on the poles or lines. Low-flying raptors are also at risk of colliding with power lines, which can be hard to see, especially during inclement weather.

To minimize these potential impacts, Mount Wheeler Power would use APLIC avian deterring design measures (APLIC 2006, 2012) or best available technology as noted in Section 2.3.3 and Table 2.3-8.

Ongoing operations, maintenance, and reclamation activities taking place near active raptor nests could disturb and displace adults, ultimately leading to nest failure. To protect active raptor nests and surrounding habitat, activities would be restricted from May 1 through July 15 within 0.5 mile of active raptor nest sites. These measures would help to limit the potential for disturbance to special status raptors that may nest in the Plan area. Overall, the implementation of design features and Applicant-Committed EPMs (Table 2.3-8) to minimize impacts on migratory birds, and raptors in particular, would minimize the short-term impacts of the operations, maintenance, and reclamation phases of the Proposed Action on special status raptors.

Special Status Migratory Birds

Impacts to special status migratory bird species during the operations, maintenance, and reclamation phases of the Proposed Action would be similar to those described for migratory birds in general, and include the effects of displacement, noise, the potential for direct mortality from equipment, vehicles, and power lines. The various Applicant-Committed EPMs (Table 2.3-8) that Midway would implement to protect migratory birds would help to minimize the impacts of the Proposed Action on these species.

4.9.4 Northern Power Line Route Alternative (Alternative 2)

The Northern Power Line Route Alternative would result in similar types, intensity and duration of impacts to wildlife resources as described under the Proposed Action, except that this alternative would involve a power line corridor that is 7.1 miles shorter than the Proposed Action power line corridor. This shorter corridor would disturb slightly less mule deer and pronghorn antelope year-round range and less PHMA and GHMA. Under this alternative the proposed power line route would not pass through or near any known Greater Sage-Grouse leks. Details on impacts to all wildlife species categories analyzed under the Proposed Action are provided in the following sections for the Northern Power Line Route Alternative. Figure 4.9-4 shows the Northern Power Line Route Alternative in relation to wildlife resources.

Construction

Big Game

Construction-related impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action, with the exception of impacting approximately 21 fewer acres of year-round mule deer range and 16 fewer acres of year-round pronghorn antelope range. Surface disturbance in mule deer crucial winter range would be the same as that described for the Proposed Action (Table 4.9-1). Impacts to big game would be short-term during construction with the exception of direct habitat losses, which would be long-term.

Small Mammals, Predatory Mammals, and Reptiles

Construction-related impacts to small mammals, predatory mammals, and reptiles would be short-term and similar to those outlined under the Proposed Action.

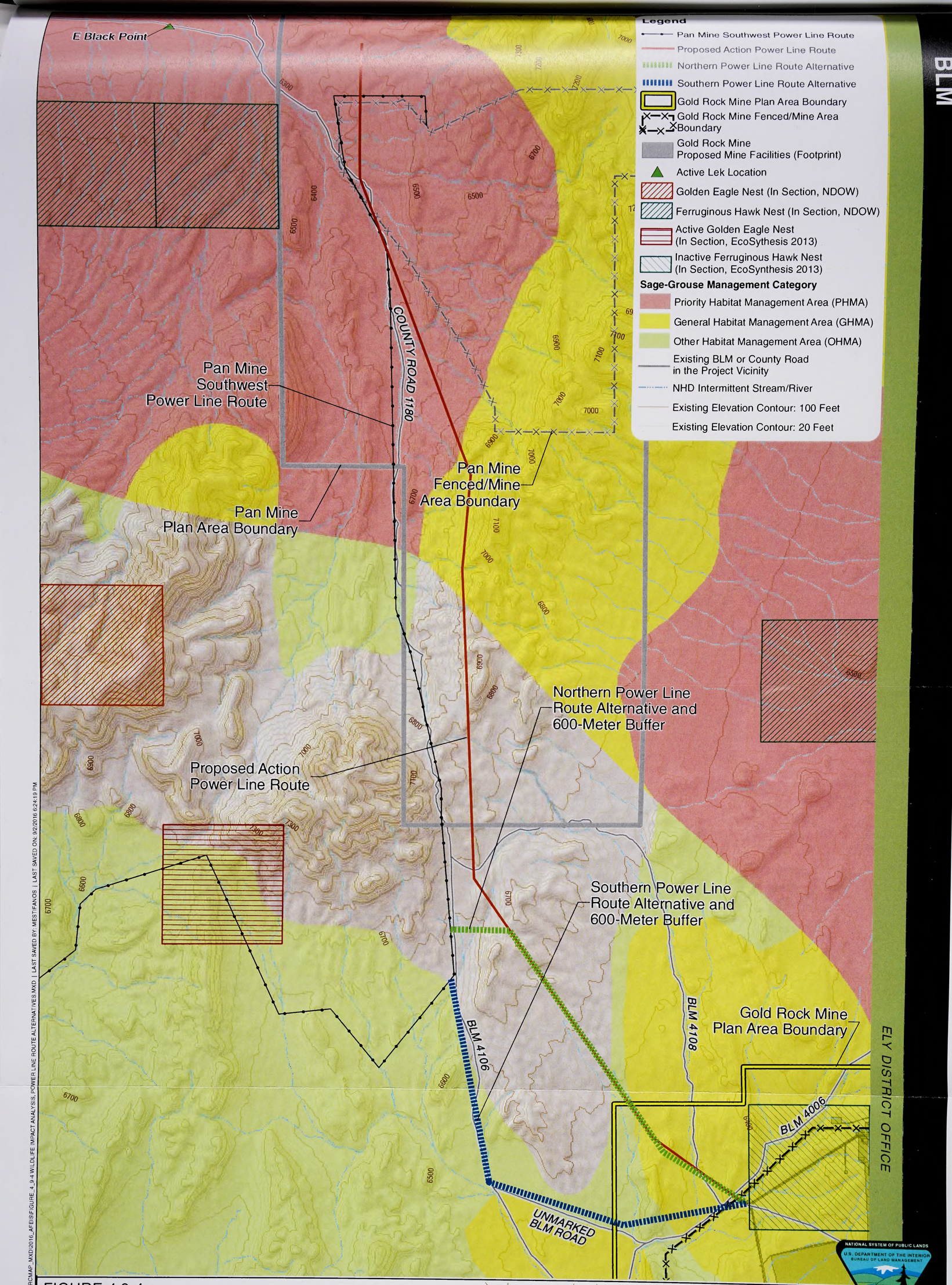
Migratory Birds (Except Eagles)

Construction-related impacts to migratory birds (except eagles), would be similar to those outlined under the Proposed Action, and the same amount of disturbance to nests is anticipated. Overall, impacts to migratory birds would be short-term during construction except for direct habitat losses, which would be long-term.

Special Status Species

Southwestern Willow Flycatcher

As described in Section 3.9, there is no suitable habitat for the southwestern willow flycatcher in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Northern Power Line Route Alternative would have no effect on this species.



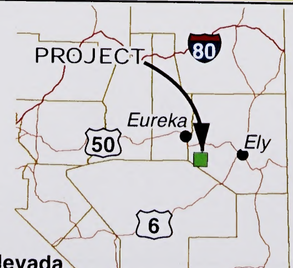
PATH: Z:\GIS\PROJECTS_ENV\CO201617_GOLDROCK\GIS\ARCMAP_MXD\2016_AFB\SFIGURE_4_9-4 WILDLIFE IMPACT ANALYSIS, POWER LINE ROUTE ALTERNATIVES.MXD | LAST SAVED BY: MEST.FANOS | LAST SAVED ON: 9/2/2016 6:24:19 PM

FIGURE 4.9-4
WILDLIFE IMPACT ANALYSIS,
POWER LINE ROUTE ALTERNATIVES

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 9/2/2016

0 1 2 Miles



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Basemap Source: ESRI World Shaded Relief Map Service
Sage-Grouse Management Category Data Source: U.S. Geological Survey, Western Ecological Research Center, Dixon Field Station, Dixon, CA. Nevada Sagebrush Ecosystem Program, Carson City, NV (August 2014).

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Yellow-billed Cuckoo

As described in Section 3.9, there is no suitable habitat for the yellow-billed cuckoo in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Northern Power Line Route Alternative would have no effect on this species.

Railroad Valley Springfish

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

Eagles

Short-term construction-related impacts to eagles would be similar to those outlined under the Proposed Action, and the same amount of disturbance to nests is anticipated.

Greater Sage-Grouse

Compared with the Proposed Action, there would be less direct and indirect disturbance to Greater Sage-Grouse habitat under this alternative. Under this alternative the proposed power line route would not pass through or near any known Greater Sage-Grouse leks. Noise-generating components would be the same distance from known leks as noted in Table 4.9-3 and Table 4.9-4; therefore, noise impacts on leks would be the same as described for the Proposed Action. Other impacts to Greater Sage-Grouse under this alternative, including anticipated road use, would be similar to those under the Proposed Action.

Surface disturbance would result in long-term impacts to 1,765 acres of PHMA,1,634 acres of GHMA, and 109 acres of OHMA compared with 1,782, 1,641, and 109 acres of PHMA, GHMA, and OHMA, respectively, under the Proposed Action.

For this alternative, project-related power lines outside the Plan area could impact 517 acres of PHMA, 752 acres of GHMA, and 154 acres of OHMA due to Greater Sage-Grouse avoidance of habitat within 1,968 feet (600 meters) of power lines, compared to 2,299, 1,390, and 149 acres of PHMA, GHMA, and OHMA, respectively, under the Proposed Action (Table 4.9-5). This alternative could impact 1,782 fewer acres of PHMA and approximately 638 fewer acres of GHMA located within 1,968 feet (600 meters) of the Northern Power Line, compared to the Proposed Action power line.

Pygmy Rabbit

Construction impacts to the pygmy rabbit under this alternative would be similar to those under the Proposed Action except that the acreage of direct habitat disturbance would be slightly lower. The Northern Power Line Route Alternative would result in the long-term removal of 2,231 acres of big sagebrush habitat, compared to 2,247 acres under the Proposed Action.

Special Status Bats

Construction impacts to special status bat species under this alternative would be similar to those under the Proposed Action. The Northern Power Line Route Alternative would result in the long-term removal of 3,151 acres of shrubland and woodland habitat that may be used by bats for foraging and roosting, compared with 3,184 acres under the Proposed Action.

Pale and Dark Kangaroo Mouse

Construction impacts to the pale kangaroo mouse and dark kangaroo mouse under this alternative would be similar to those under the Proposed Action. The Northern Power Line Route

Alternative would result in the long-term removal of 190 acres of preferred habitat for the pale kangaroo mouse and 2,231 acres of preferred habitat for the dark kangaroo mouse, compared to 191 and 2,247 acres under the Proposed Action, respectively.

Bighorn Sheep

As with the Proposed Action, the Northern Power Line Route Alternative would not impact any bighorn sheep range and would have short-term impacts on relatively few individuals.

Special Status Raptors

Construction impacts to special status raptor species under this alternative would be similar to those under the Proposed Action. The Northern Power Line Route alternative would result in the long-term removal of 3,151 acres of shrubland and woodlands habitats that may be used by raptors for nesting and foraging, compared with 3,184 acres under the Proposed Action.

Special Status Migratory Birds

Construction impacts to special status migratory birds under this alternative would be similar to those under the Proposed Action. The Northern Power Line Route alternative would result in the long-term removal of 3,151 acres of shrubland and woodland habitats that may be used by special status migratory birds for nesting and foraging, compared with 3,184 acres under the Proposed Action. This would include 730 acres of impact to pinyon-juniper woodland habitat (compared with 746 acres under the Proposed Action) and 2,231 acres of impact to big sagebrush habitat (compared with 2,247 acres under the Proposed Action).

Operations, Maintenance, and Reclamation

Big Game

Short- and long-term operations, maintenance, and reclamation impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action. The Northern Power Line Route Alternative would result in fewer impacts to year-round mule deer and pronghorn antelope range, as described above for construction-related impacts.

Small Mammals, Predatory Mammals, and Reptiles

Short- and long-term impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

Migratory Birds (Except Eagles)

Impacts to migratory birds (except eagles) would be similar to those outlined under the Proposed Action.

Special Status Species

Southwestern Willow Flycatcher

As described in Section 3.9, there is no suitable habitat for the southwestern willow flycatcher in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Northern Power Line Route Alternative would have no effect on this species.

Yellow-billed Cuckoo

As described in Section 3.9, there is no suitable habitat for the yellow-billed cuckoo in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Northern Power Line Route Alternative would have no effect on this species.

Railroad Valley Springfish

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

Eagles

Short- and long-term impacts to eagles would be similar to those outlined under the Proposed Action.

Greater Sage-Grouse

Under this alternative the proposed power line route would not pass through or near any known Greater Sage-Grouse leks. Due to the reduced length of the power line in Greater Sage-Grouse habitat under this alternative, the short-term effects of power line collision and raptor predation risk would be reduced under this alternative relative to the Proposed Action. Other impacts to Greater Sage-Grouse, including anticipated road use, during the operations, maintenance, and reclamation phases of this alternative would be similar to those described above under the Proposed Action.

Pygmy Rabbit

Due to the reduced length of the power line under this alternative, the short-term potential for increased predation risk from raptor perching may be lower under this alternative than under the Proposed Action. Other operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

Special Status Bats

Short- and long-term operations, maintenance, and reclamation impacts to special status bat species under this alternative would be similar to those described for the Proposed Action.

Pale and Dark Kangaroo Mouse

Due to the reduced length of the power line under this alternative, the short-term potential for increased predation risk from raptor perching may be lower under this alternative than under the Proposed Action. Other operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

Bighorn Sheep

As with the Proposed Action, the Northern Power Line Route Alternative would not impact any bighorn sheep range.

Special Status Raptors

Due to the reduced length of the power line under this alternative, the short-term potential for collisions and opportunities for raptor perching and nesting may be lower under this alternative than under the Proposed Action. Other operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

Special Status Migratory Birds

Due to the reduced length of the power line under this alternative, the short-term potential for collisions may be lower under this alternative than under the Proposed Action. Other operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

4.9.5 Southern Power Line Route Alternative (Alternative 3)

The Southern Power Line Route Alternative would result in similar types, intensity and duration of impacts to wildlife resources as described under the Proposed Action, except that this alternative would involve a power line corridor that is 6.7 miles shorter than the Proposed Action power line corridor. Under this alternative the proposed power line route would not pass through or near any known Greater Sage-Grouse leks. This shorter corridor would disturb slightly less mule deer and pronghorn antelope year-round range and less mapped Greater Sage-Grouse PHMA and GHMA. Details on impacts to all wildlife species categories analyzed under the Proposed Action are provided in the following sections for the Southern Power Line Route Alternative. Figure 4.9-4 shows the Southern Power Line Route Alternative in relation to wildlife resources.

Construction

Big Game

Short- and long-term construction-related impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action, with the exception of impacting approximately 22 fewer acres of year-round mule deer range and 17 fewer acres of year-round pronghorn antelope range. Disturbance acres to mule deer crucial winter range would be the same as those described for the Proposed Action.

Small Mammals, Predatory Mammals, and Reptiles

Short-term construction-related impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

Migratory Birds (Except Eagles)

Construction-related impacts to migratory birds (except eagles), would be similar to those outlined under the Proposed Action, and the same acres of impacts to nests are anticipated.

Special Status Species

Southwestern Willow Flycatcher

As described in Section 3.9, there is no suitable habitat for the southwestern willow flycatcher in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Southern Power Line Route Alternative would have no effect on this species.

Yellow-billed Cuckoo

As described in Section 3.9, there is no suitable habitat for the yellow-billed cuckoo in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Southern Power Line Route Alternative would have no effect on this species.

Railroad Valley Springfish

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

Eagles

Construction-related impacts to eagles would be similar to those outlined under the Proposed Action, and similar indirect impacts including potential displacement are anticipated.

Greater Sage-Grouse

Less direct and indirect disturbance to Greater Sage-Grouse habitat would occur under this alternative compared with the Proposed Action. Under this alternative the proposed power line route would not pass through or near any known Greater Sage-Grouse leks. Noise-generating components would be the same distance from known leks as noted in Table 4.9-3 and Table 4.9-4; therefore, noise impacts on leks would be the same as described for the Proposed Action. Other short- and long-term impacts on Greater Sage-Grouse, including anticipated road use, would be similar to those under the Proposed Action.

Surface disturbance would result in direct, long-term impact 1,765 acres of PHMA, 1,631 acres of GHMA, and 119 acres of OHMA, compared to 1,782, 1,641, and 109 acres of PHMA, GHMA, and OHMA, respectively, under the Proposed Action. For this alternative, project-related power lines outside the Plan area could impact approximately 517 acres of PHMA, 736 acres of GHMA, and 979 acres of OHMA due to Greater Sage-Grouse avoidance of habitat within 1,968 feet (600 meters) of power lines, compared to approximately 2,299,1,390, and 149 acres of PHMA, GHMA, and OHMA, respectively, under the Proposed Action (Table 4.9-5). Under this alternative, approximately 1,782 fewer acres of PHMA and approximately 654 fewer acres of GHMA would be located within 1,968 feet (600 meters) of the Southern Power Line compared to the Proposed Action power line.

Pygmy Rabbit

Construction impacts to the pygmy rabbit under this alternative would be similar to those under the Proposed Action. The Southern Power Line Route Alternative would result in the long-term removal of 2,233 acres of big sagebrush habitat, compared to 2,247 acres under the Proposed Action.

Special Status Bats

Construction impacts to special status bat species under this alternative would be similar to those under the Proposed Action. The Southern Power Line Route Alternative would result in the long-term removal of 3,150 acres of shrubland and woodland habitat that may be used by bats for foraging and roosting, compared with 3,184 acres under the Proposed Action.

Pale and Dark Kangaroo Mouse

Construction impacts to the pale kangaroo mouse and dark kangaroo mouse under this alternative would be similar to those under the Proposed Action. The Southern Power Line Route Alternative would result in the long-term removal of 191 acres of preferred habitat for the pale kangaroo mouse and 2,233 acres of preferred habitat for the dark kangaroo mouse, compared to 191 and 2,247 acres under the Proposed Action, respectively.

Bighorn Sheep

As with the Proposed Action, the Southern Power Line Route Alternative would not impact any bighorn sheep range.

Special Status Raptors

Construction impacts to special status raptor species under this alternative would be similar to those under the Proposed Action. The Southern Power Line Route alternative would result in the long-term removal of 3,150 acres of shrubland and woodland habitats that may be used by raptors for nesting and foraging, compared with 3,184 acres under the Proposed Action.

Special Status Migratory Birds

Construction impacts to special status migratory bird species under this alternative would be similar to those under the Proposed Action. The Southern Power Line Route alternative would result in the long-term removal of 3,150 acres of shrubland and woodland habitats that may be used by special status migratory birds for nesting and foraging, compared with 3,184 acres under the Proposed Action. This would include 726 acres of impact to pinyon-juniper woodland habitat (compared with 746 acres under the Proposed Action) and 2,233 acres of impact to big sagebrush habitat (compared with 2,247 acres under the Proposed Action).

Operations, Maintenance, and Reclamation

Big Game

Short- and long-term operations, maintenance, and reclamation impacts to big game, particularly mule deer and pronghorn antelope, would be similar as those outlined under the Proposed Action. The Southern Power Line Route Alternative would result in fewer impacts to year-long mule deer and pronghorn antelope range, as described above for construction-related impacts.

Small Mammals, Predatory Mammals, and Reptiles

Impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

Migratory Birds (Except Eagles)

Impacts to migratory birds (except eagles) would be similar to those outlined under the Proposed Action.

Special Status Species

Southwestern Willow Flycatcher

As described in Section 3.9, there is no suitable habitat for the southwestern willow flycatcher in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Southern Power Line Route Alternative would have no effect on this species.

Yellow-billed Cuckoo

As described in Section 3.9, there is no suitable habitat for the yellow-billed cuckoo in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Southern Power Line Route Alternative would have no effect on this species.

Railroad Valley Springfish

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

Eagles

Impacts to eagles would be similar to those outlined under the Proposed Action.

Greater Sage-Grouse

Under this alternative the proposed power line route would not pass through or near any known Greater Sage-Grouse leks. Due to the reduced length of the power line in Greater Sage-Grouse habitat under this alternative, the long-term effects of power line collision and raptor predation risk

would be reduced under this alternative relative to the Proposed Action. Other short- and long-term impacts to Greater Sage-Grouse, including anticipated road use, during the operations, maintenance, and reclamation phases of this alternative would be the same as those described above under the Proposed Action.

Pygmy Rabbit

Due to the reduced length of the power line under this alternative, the short-term potential for increased predation risk from raptor perching may be lower under this alternative than under the Proposed Action. Other operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

Special Status Bats

Short- and long-term operations, maintenance, and reclamation impacts to special status bat species under this alternative would be similar to those described for the Proposed Action.

Pale and Dark Kangaroo Mouse

Due to the reduced length of the power line under this alternative, the short-term potential for increased predation risk from raptor perching may be lower under this alternative than under the Proposed Action. Other operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

Bighorn Sheep

As with the Proposed Action, the Southern Power Line Route Alternative would not impact any bighorn sheep range.

Special Status Raptors

Due to the reduced length of the power line under this alternative, the short-term potential for collisions and opportunities for raptor perching and nesting may be lower under this alternative than under the Proposed Action. Other operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

Special Status Migratory Birds

Due to the reduced length of the power line under this alternative, the short-term potential for collisions may be lower under this alternative than under the Proposed Action. Other operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

4.9.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

Impacts to wildlife from implementation of the Northwest Main Access Route Alternative, Northern Power Line Route would be similar to impacts described for the Proposed Action, except there would be more acres of disturbance to mule deer and pronghorn antelope year-round range; potentially fewer wildlife collisions along Green Springs Road; more acres of surface disturbance in PHMA, GHMA and OHMA, less direct and indirect impacts to Greater Sage-Grouse and PHMA and GHMA due to Greater Sage-Grouse avoidance of habitat within 1,968 feet (600 meters) of project-related power lines outside the Plan area; and less potential impact to leks from project-related noise. Details on impacts to all wildlife species categories analyzed under the Proposed Action are provided in the following sections for the Northwest Main Access Route Alternative, Northern Power Line Route.

Figure 4.9-5 shows the Northwest Main Access Route Alternative, Northern Power Line Route in relation to wildlife resources.

Construction

Big Game

Construction-related impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action, with the exception of impacting approximately 32 more acres of year-round mule deer range. Approximately 57 more acres of impact to year-round pronghorn antelope range would occur. Disturbance acres to mule deer crucial winter range would be similar to those described for the Proposed Action.

The Northwest Main Access Route would likely contribute to fewer big game collisions than the Proposed Action. This is because the Northwest Main Access Route Alternative, Northern Power Line Route would be located farther from the Ruby mule deer migration corridor (which follows Green Springs Road south from US 50) compared to the Proposed Action and workers may prefer to stay in Eureka and approach the site from the west.

However, although Midway could direct commercial traffic associated with the mine to use the Northwest Main Access Route Alternative, Northern Power Line Route, Green Springs Road would still remain open to vehicular traffic. Therefore, temporary and short-term impacts due to collisions and traffic noise on Green Springs Road would still occur under the Northwest Main Access Route Alternative, though at a reduced level relative to the Proposed Action. Traffic on Green Springs Road would include up to 28 and 16 daily trips for construction and operations, respectively (Table 4.8-6), compared with up to 354 and 292 daily trips under the Proposed Action (Table 4.8-2).

Small Mammals, Predatory Mammals, and Reptiles

Short-term construction-related impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

Migratory Birds (Except Eagles)

Construction-related impacts to migratory birds (except eagles), would be similar to those outlined under the Proposed Action, and the same amount of disturbance to nests are anticipated.

Special Status Species

Southwestern Willow Flycatcher

As described in Section 3.9, there is no suitable habitat for the southwestern willow flycatcher in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Northwest Main Access Route Alternative, Northern Power Line Route would have no effect on this species.

Yellow-billed Cuckoo

As described in Section 3.9, there is no suitable habitat for the yellow-billed cuckoo in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Northwest Main Access Route Alternative, Northern Power Line Route would have no effect on this species.

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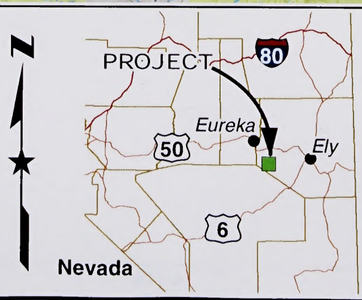
FIGURE 4.9-5
WILDLIFE IMPACT ANALYSIS, VEHICULAR ROUTE ALTERNATIVES

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 10/18/2017

0 1 2 Miles



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Basemap Source: ESRI World Shaded Relief Map Service
Sage-Grouse Management Category Data Source: U.S. Geological Survey, Western Ecological Research Center, Dixon Field Station, Dixon, CA. Nevada Sagebrush Ecosystem Program, Carson City, NV (August 2014).
Mule Deer Range Data Source: Nevada Department of Wildlife (NDOW), provided to ARCADIS on 08/27/2014.

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Railroad Valley Springfish

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

Eagles

Construction-related impacts to eagles would be similar to those outlined under the Proposed Action, and similar indirect impacts including potential displacement are anticipated.

Greater Sage-Grouse

Under this alternative, the proposed mining facilities would be the same distance from leks as described for the Proposed Action in Table 4.9-3 and Table 4.9-4; however, under this alternative, Midway would direct commercial traffic associated with the Gold Rock Mine to use the Northwest Main Access Route Alternative, Northern Power Line Route to access the site. Use of this alternative main access route would minimize effects to Greater Sage-Grouse using leks in the vicinity of Green Springs Road.

This alternative main access route would include the Pan Mine access road. The Pan Mine access road was designed in coordination with NDOW and the BLM to use topographic features as noise barriers to minimize impacts on the two known active leks in the area (Southwest Pancake Summit and East Black Point leks).

Noise monitoring and mitigation for the Pan Mine includes a noise limit of 10 dBA over ambient, and this noise limit is proposed for the Gold Rock Mine Project. Patricelli et al. (2013, undated) used traffic noise data to extrapolate distances at which noise levels would diminish to 10 dBA above ambient levels on roads. Data were collected in an oil well field in Wyoming, near roads with intermittent traffic conditions (one vehicle passing at a time rather than a steady stream of vehicles) (Patricelli et al. 2013, undated).

Based on these studies, noise would be expected to attenuate to 10 dBA above ambient at a distance of 0.7 to 1.1 miles from the source, assuming ambient noise levels ranging from 22 dBA to 16 dBA, respectively. Under conditions of cylindrical spreading, such as temperature inversions, noise would be expected to attenuate to 10 dBA above ambient at a distance of 1.1 to 2.1 miles from the source, assuming ambient noise levels ranging from 22 dBA to 16 dBA, respectively. Neither of these scenarios account for topographic barriers and vegetation, both of which would be expected to attenuate noise further.

The Southwest Pancake Summit and East Black Point leks are located 1.1 and 1.6 miles, respectively, from the Pan Mine access road, which would be part of the Northwest Main Access Route Alternative, Northern Power Line Route for the Gold Rock Mine Project. Intermittent traffic conditions are expected along the Northwest Main Access Route Alternative, with up to 354 daily trips during the construction phase and 292 daily trips during the operations phase (Table 4.8-6). Based on the Patricelli data, the distance of the leks from the alternative main access route, and the anticipated traffic conditions, project-related traffic noise levels are anticipated to be at or below 10 dBA above ambient at both of the leks under normal conditions using an ambient level of 22, 20, or 16 dBA.

Under conditions of cylindrical spreading, such as during temperature inversions, the Patricelli data suggest that exceedances are not expected at either lek if the ambient noise level is 22 dBA. Using an ambient level of 20 dBA, exceedances may occur at the Southwest Pancake Summit lek under these conditions. Exceedances could occur at both leks using an ambient level of 16 dBA. However, the Patricelli data do not account for topographic barriers and vegetation, which

are both present between the Pan access road and the two leks. Given the presence of topography and vegetation, exceedances at the two leks are unlikely.

As part of the Pan Mine FEIS (BLM 2013c), baseline ambient noise monitoring was conducted at the Southwest Pancake Summit and East Black Point leks. The monitoring involved a longer monitoring period (from three hours prior to sunrise to three hours after sunrise rather than one hour prior to sunrise to three hours after sunrise) and reported L_{90} A-weighted values at the request of NDOW and the BLM based on existing scientific information (BLM 2013c). Monitoring results indicated that ambient noise levels (L_{90}) at the two leks were 19 dBA and 18 dBA, respectively (J.C. Brennan 2013a,b).

Additionally, noise modeling was performed for the Pan Mine FEIS (BLM 2013c) to assess potential impacts from project-related noise. For the Pan Mine noise modeling, noise specialists used the Federal Highway Administration (FHWA) Roadway Construction Noise Model (BLM 2013c). Appendix A of the FHWA Roadway Construction Noise Model User's Guide (FHWA 2006) identifies best practices for calculating estimated noise shielding, ranging from 3 dBA for noise barriers or obstructions (for example, dirt mounds) that just break the line-of-site between the noise source and the receptor (for example, a lek) to 8 dBA for a solid barrier located close to the source. For the Pan Mine FEIS, modelers included a conservative value of 4.8 dB to simulate the average topographic shielding effect (BLM 2013c).

The Pan Mine noise modeling assessed potential impacts of three noise scenarios on the closest lek: Road construction; open-pit mining; and access road travel. The access road travel assessment is most applicable to the scenario expected under the Gold Rock Mine Northwest Main Access Route alternatives. The Pan Mine noise modeling was conducted using "average" or median amplitude sound pressure levels (L_{eq}) compared to L_{90} plus 10 as the threshold. This modeling showed that the most common noise modeled from the access road traffic was nearly at the threshold (at the Southwest Pancake Summit lek) with a potential exceedance of 0.9 dBA. Comparing the ambient noise in L_{eq} to modeled noise levels in L_{eq} results in a noise calculation of 10 dBA below ambient at this lek. Given the distances from the leks as described above, and the distances for noise to drop off based on Patricelli's recommendations, the authors of the Pan Mine noise modeling study did not predict any noise exceedances at either lek.

Noise monitoring conducted for the Pan Mine during construction in 2014 and operation in 2015 did not, in fact, detect any noise threshold exceedances related to traffic on the mine access road (SWCA 2014, 2016). Considering the topographic barriers and vegetation, the anticipated intermittent traffic conditions, and the lack of traffic-related noise exceedances from the Pan Mine traffic thus far, noise exceedances due to Gold Rock Mine Project-related traffic at the East Black Point Lek and Southwest Pancake Summit Lek under this alternative are unlikely.

Although Midway could direct commercial traffic associated with the Gold Rock Mine to use the Northwest Main Access Route Alternative, Northern Power Line Route, Green Springs Road and the rest of the existing main access route would remain open to vehicular traffic. Under this alternative, up to 28 daily trips are anticipated on Green Springs Road and the rest of the existing main access route (Table 4.8-6), compared to up to 354 daily trips under the Proposed Action (Table 4.8-2). This lower amount of traffic compared to the Proposed Action would likely result in fewer noise impacts on the Belmont Junction Southwest, Seligman Canyon, Hoppe Spring West, and Monte Cristo West leks.

Surface disturbance including construction and widening of roads to establish the access route would result in direct, long-term impacts to approximately 1,795 acres of PHMA, 1,651 acres of

GHMA, and 116 acres of OHMA under this alternative. In comparison, surface disturbance under the Proposed Action would impact 1,782, 1,641, and 109 acres of PHMA, GHMA, and OHMA, respectively (Table 4.9-5). Incorporating the Northern Power Line Route Alternative, project-related power lines outside the Plan area could impact approximately 517 acres of PHMA, 752 acres of GHMA, and 154 acres of OHMA due to Greater Sage-Grouse avoidance of habitat within 1,968 feet (600 meters) of power lines, compared to approximately 2,299, 1,390, and 149 acres of PHMA, GHMA, and OHMA, respectively, under the Proposed Action (Table 4.9-5). Under this alternative, 1,782 fewer acres of PHMA and approximately 638 fewer acres of GHMA would be located within 1,968 feet (600 meters) of the Northern Power Line, compared to the Proposed Action power line.

Pygmy Rabbit

Construction impacts to the pygmy rabbit under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Northern Power Line Route would result in the long-term removal of 2,293 acres of big sagebrush habitat, compared to 2,247 acres under the Proposed Action.

Special Status Bats

Construction impacts to special status bat species under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Northern Power Line Route would result in the long-term removal of 3,233 acres of shrubland and woodland habitat that may be used by bats for foraging and roosting, compared with 3,184 acres under the Proposed Action.

Pale and Dark Kangaroo Mouse

Construction impacts to the pale kangaroo mouse and dark kangaroo mouse under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Northern Power Line Route would result in the long-term removal of 193 acres of preferred habitat for the pale kangaroo mouse and 2,293 acres of preferred habitat for the dark kangaroo mouse, compared to 191 and 2,247 acres, respectively, under the Proposed Action.

Bighorn Sheep

As with the Proposed Action, the Northwest Main Access Route Alternative would not impact any bighorn sheep range.

Special Status Raptors

Construction impacts to special status raptor species under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Northern Power Line Route would result in the long-term removal of 3,233 acres of shrubland and woodland habitats that may be used by raptors for nesting and foraging, compared with 3,184 acres under the Proposed Action.

Special Status Migratory Birds

Construction impacts to special status migratory bird species under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Northern Power Line Route would result in the long-term removal of 3,233 acres of shrubland and woodland habitats that may be used by special status migratory birds for nesting and foraging, compared with 3,184 acres under the Proposed Action. This would include 747 acres of impact to pinyon-juniper

woodland habitat (compared with 746 acres under the Proposed Action) and 2,293 acres of impact to big sagebrush habitat (compared with 2,247 acres under the Proposed Action).

Operations, Maintenance, and Reclamation

Big Game

Short- and long-term operations, maintenance, and reclamation impacts to big game, particularly mule deer and pronghorn antelope, would be similar as those outlined under the Proposed Action. This alternative would result in slightly greater impacts to year-long mule deer and pronghorn antelope range, as described above for construction-related impacts, but would possibly contribute to fewer collisions due to its distance away from a known migration route for mule deer.

Small Mammals, Predatory Mammals, and Reptiles

Impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action

Migratory Birds (Except Eagles)

Impacts to migratory birds (except eagles) would be similar to those outlined under the Proposed Action.

Special Status Species

Southwestern Willow Flycatcher

As described in Section 3.9, there is no suitable habitat for the southwestern willow flycatcher in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Northwest Main Access Route Alternative, Northern Power Line Route would have no effect on this species.

Yellow-billed Cuckoo

As described in Section 3.9, there is no suitable habitat for the yellow-billed cuckoo in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Northwest Main Access Route Alternative, Northern Power Line Route would have no effect on this species.

Railroad Valley Springfish

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

Eagles

Impacts to eagles would be similar as those outlined under the Proposed Action.

Greater Sage-Grouse

Incorporating the Northern Power Line Route under this alternative, the reduced length of the power line in Greater Sage-Grouse habitat would result in reduced risk of power line collision and raptor predation, thereby reducing short-term effects relative to the Proposed Action.

Under this alternative, up to 16 daily trips are anticipated on Green Springs Road and rest of the existing main access route during operations (Table 4.8-6), compared with 292 daily trips under the Proposed Action (Table 4.8-2). As a result, the Northwest Main Access Route Alternative,

Northern Power Line Route Alternative would likely result in fewer noise impacts on the Belmont Junction Southwest, Seligman Canyon, Hoppe Spring West, and Monte Cristo West leks. However, up to 292 daily trips are anticipated on the Northwest Main Access Route during the operations phase under this alternative (Table 4.8-6). Therefore, this alternative may have comparatively greater noise impacts on the Southwest Pancake Summit and East Black Point leks, which would be located 1.1 and 1.6 miles, respectively, from the Northwest Main Access Route Alternative, Northern Power Line Route.

As described above for construction, no traffic-related noise exceedances were reported for either the Southwest Pancake Summit lek or the East Black Point lek during the first two years of noise monitoring for the Pan Mine (SWCA 2014, 2016). Considering the topographic barriers and vegetation, the anticipated intermittent traffic conditions, and the lack of traffic-related noise exceedances from the Pan Mine traffic thus far, noise exceedances due to Gold Rock Mine Project-related traffic at the East Black Point Lek and Southwest Pancake Summit Lek under this alternative are unlikely.

The mine facilities for the Gold Rock Mine Project would be located more than 3.2 miles from active leks, including Cathedral lek. At this distance, mining-related noise is not expected to impact Greater Sage-Grouse using active leks in the region.

Other short- and long-term impacts to Greater Sage-Grouse during the operations, maintenance, and reclamation phases of this alternative would be similar to those described above under the Proposed Action.

Pygmy Rabbit

Operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

Special Status Bats

Operations, maintenance, and reclamation impacts to special status bat species under this alternative would be similar to those described for the Proposed Action.

Pale and Dark Kangaroo Mouse

Operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

Bighorn Sheep

As with the Proposed Action, the Northwest Main Access Route Alternative would not impact any bighorn sheep range.

Special Status Raptors

Operations, maintenance, and reclamation impacts to special status raptor species would be similar to those described above for the Proposed Action.

Special Status Migratory Birds

Operations, maintenance, and reclamation impacts to special status migratory birds would be similar to those described above for the Proposed Action.

4.9.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

Impacts to wildlife from implementation of the Northwest Main Access Route Alternative, Southern Power Line Route would be similar to impacts described for the Proposed Action, except there would be more acres of disturbance to mule deer and pronghorn antelope year-round range; potentially fewer wildlife collisions along Green Springs Road; less direct and indirect impacts to Greater Sage-Grouse and PHMA and GHMA due to Greater Sage-Grouse avoidance of habitat within 1,968 feet (600 meters) of project-related power lines outside the Plan area; and less potential impact to leks from project-related noise. Details on impacts to all wildlife species categories analyzed under the Proposed Action are provided in the following sections for the Northwest Main Access Route Alternative, Southern Power Line Route. Additional information on impacts to wildlife is provided below. Figure 4.9-5 shows the Northwest Main Access Route Alternative, Southern Power Line Route in relation to wildlife resources.

Construction

Big Game

Construction-related impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action, with the exception of impacting approximately 41 more acres of year-round mule deer range. Approximately 66 more acres of year-round pronghorn antelope range would be impacted. Disturbance to mule deer crucial winter range would be similar to those described for the Proposed Action.

The Northwest Main Access Route Alternative, Southern Power Line Route would likely contribute to fewer big game collisions than the Proposed Action. This is because the Northwest Main Access Route would be located farther from the Ruby mule deer migration corridor (which follows Green Springs Road south from US 50) compared to the Proposed Action and workers may prefer to stay in Eureka and approach the site from the west.

However, although Midway could direct commercial traffic associated with the mine to use the Northwest Main Access Route Alternative, Green Springs Road would still remain open to vehicular traffic. Therefore, temporary and short-term impacts due to collisions and traffic noise on Green Springs Road would still occur under the Northwest Main Access Route Alternative, though at a reduced level relative to the Proposed Action. Traffic on Green Springs Road would include up to 28 and 16 daily trips for construction and operations, respectively (Table 4.8-6), compared with 354 and 292 daily trips under the Proposed Action (Table 4.8-2).

Overall, impacts to big game would be short-term during construction.

Small Mammals, Predatory Mammals, and Reptiles

Short-term construction-related impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

Migratory Birds (Except Eagles)

Construction-related impacts to migratory birds (except eagles), would be similar to those outlined under the Proposed Action, and the same amount of disturbance to nests are anticipated.

Special Status Species

Southwestern Willow Flycatcher

As described in Section 3.9, there is no suitable habitat for the southwestern willow flycatcher in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Northwest Main Access Route Alternative, Southern Power Line Route would have no effect on this species.

Yellow-billed Cuckoo

As described in Section 3.9, there is no suitable habitat for the yellow-billed cuckoo in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Northwest Main Access Route Alternative, Southern Power Line Route would have no effect on this species.

Railroad Valley Springfish

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

Eagles

Construction-related impacts to eagles would be similar to those outlined under the Proposed Action, and similar indirect impacts including potential displacement are anticipated.

Greater Sage-Grouse

Under this alternative, the proposed mining facilities would be the same distance from leks as described for the Proposed Action in Table 4.9-3 and Table 4.9-4; however, under this alternative, Midway would direct commercial traffic associated with the Gold Rock Mine to use the Northwest Main Access Route Alternative, Southern Power Line Route to access the site. Use of this alternative main access route would minimize effects to Greater Sage-Grouse using leks in the vicinity of Green Springs Road.

This alternative main access route would include the Pan Mine access road. The Pan Mine access road was designed in coordination with NDOW and the BLM to use topographic features as noise barriers to minimize impacts on the two known active leks in the area (Southwest Pancake Summit and East Black Point leks).

Noise monitoring and mitigation for the Pan Mine includes a noise limit of 10 dBA over ambient, and this noise limit is proposed for the Gold Rock Mine Project. Patricelli et al. (2013, undated) used traffic noise data to extrapolate distances at which noise levels would diminish to 10 dBA above ambient levels on roads. Data were collected in an oil well field in Wyoming, near roads with intermittent traffic conditions (one vehicle passing at a time rather than a steady stream of vehicles) (Patricelli et al. 2013, undated).

Based on these studies, noise would be expected to attenuate to 10 dBA above ambient at a distance of 0.7 to 1.1 miles from the source, assuming ambient noise levels ranging from 22 dBA to 16 dBA, respectively. Under conditions of cylindrical spreading, such as temperature inversions, noise would be expected to attenuate to 10 dBA above ambient at a distance of 1.1 to 2.1 miles from the source, assuming ambient noise levels ranging from 22 dBA to 16 dBA, respectively. Neither of these scenarios account for topographic barriers and vegetation, both of which would be expected to attenuate noise further.

The Southwest Pancake Summit and East Black Point leks are located 1.1 and 1.6 miles, respectively, from the Pan Mine access road, which would be part of the Northwest Main Access Route Alternative, Southern Power Line Route for the Gold Rock Mine Project. Intermittent traffic conditions are expected along the Northwest Main Access Route Alternative, with up to 354 daily trips during the construction phase and 292 daily trips during the operations phase (Table 4.8-6). Given the Patricelli et al. (2013, undated) data described in Section 4.9.6, the distance of the leks from the alternative main access route, and the anticipated traffic conditions, Gold Rock Mine Project-related traffic noise levels are anticipated to be at or below 10 dBA above ambient at both of the leks under normal conditions using an ambient level of 22, 20,or 16 dBA.

Under conditions of cylindrical spreading, such as during temperature inversions, the Patricelli data suggest that exceedances are not expected at either lek if the ambient noise level is 22 dBA. Using an ambient level of 20 dBA, exceedances may occur at the Southwest Pancake Summit lek under these conditions. Exceedances could occur at both leks using an ambient level of 16 dBA. However, the Patricelli data do not account for topographic barriers and vegetation, which are both present between the Pan access road and the two leks. Given the presence of topography and vegetation, exceedances at the two leks are unlikely.

As part of the Pan Mine FEIS (BLM 2013c), baseline ambient noise monitoring was conducted at the Southwest Pancake Summit and East Black Point leks. The monitoring involved a longer monitoring period (from three hours prior to sunrise to three hours after sunrise rather than one hour prior to sunrise to three hours after sunrise) and reported L_{90} A-weighted values at the request of NDOW and the BLM based on existing scientific information (BLM 2013c). Monitoring results indicated that ambient noise levels (L_{90}) at the two leks were 19 dBA and 18 dBA, respectively (J.C. Brennan 2013a,b).

Additionally, noise modeling was performed for the Pan Mine FEIS (BLM 2013c) to assess potential impacts from project-related noise. For the Pan Mine noise modeling, noise specialists used the FHWA Roadway Construction Noise Model (BLM 2013c). Appendix A of the FHWA Roadway Construction Noise Model User's Guide (FHWA 2006) identifies best practices for calculating estimated noise shielding, ranging from 3 dBA for noise barriers or obstructions (for example, dirt mounds) that just break the line-of-site between the noise source and the receptor (for example, a lek) to 8 dBA for a solid barrier located close to the source. For the Pan Mine FEIS, modelers included a conservative value of 4.8 dB to simulate the average topographic shielding effect (BLM 2013c).

The Pan Mine noise modeling assessed potential impacts of three noise scenarios on the closest lek: road construction; open-pit mining; and access road travel. The access road travel assessment is most applicable to the scenario expected under the Gold Rock Mine Northwest Main Access Route alternatives. The original modeling was conducted using L_{eq} compared to L_{90} plus 10 as the threshold. This modeling showed that the most common noise modeled from the access road traffic was nearly at the threshold (at the Southwest Pancake Summit lek) with a potential exceedance of 0.9 dBA. Comparing the ambient noise in L_{eq} to modeled noise levels in L_{eq} results in a noise calculation of 10 dBA below ambient at this lek. Given the distances from the leks as described above, and the distances for noise to drop off based on Patricelli's recommendations, the authors of the Pan Mine noise modeling study did not predict any noise exceedances at either lek.

Noise monitoring conducted for the Pan Mine during construction in 2014 and operation in 2015 did not, in fact, detect any noise threshold exceedances related to traffic on the mine access road (SWCA 2014, 2016). Considering the topographic barriers and vegetation, the anticipated intermittent traffic conditions, and the lack of traffic-related noise exceedances from the Pan Mine

traffic thus far, noise exceedances due to Gold Rock Mine Project-related traffic at the East Black Point Lek and Southwest Pancake Summit Lek under this alternative are unlikely.

Although Midway could direct commercial traffic associated with the Gold Rock Mine to use the Northwest Main Access Route Alternative, Green Springs Road would remain open to vehicular traffic. Up to 28 daily trips are anticipated on Green Springs Road (Table 4.8-6), compared to up to 354 daily trips under the Proposed Action (Table 4.8-2). This lower amount of traffic compared to the Proposed Action would likely result in fewer noise impacts on the Belmont Junction Southwest, Seligman Canyon, Hoppe Spring West, and Monte Cristo West leks.

Surface disturbance including construction and widening of roads to establish the access route would result in approximately 1,795 acres of direct, long-term disturbance to PHMA, 1,645 acres of GHMA, and 148 acres of OHMA under this alternative, in comparison to 1,782, 1,641, and 109 acres of PHMA, GHMA, and OHMA, respectively, under the Proposed Action (Table 4.9-5). Incorporating the Southern Power Line Route Alternative, project-related power lines outside the Plan area could impact up to approximately 517 acres of PHMA, 736 acres of GHMA, and 979 acres of OHMA due to Greater Sage-Grouse avoidance of habitat within 1,968 feet (600 meters) of power lines, compared to approximately 2,299, 1,390, and 149 acres of PHMA, GHMA, and OHMA, respectively, under the Proposed Action (Table 4.9-5). Under this alternative, approximately 1,782 fewer acres of PHMA and approximately 654 fewer acres of GHMA would be located within 1,968 feet (600 meters) of the Southern Power Line compared to the Proposed Action power line.

Pygmy Rabbit

Construction impacts to the pygmy rabbit under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Southern Power Line Route would result in the long-term removal of 2,304 acres of big sagebrush habitat, compared to 2,247 acres under the Proposed Action.

Special Status Bats

Construction impacts to special status bat species under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Southern Power Line Route would result in the long-term removal of 3,242 acres of shrubland and woodland habitat that may be used by bats for foraging and roosting, compared with 3,184 acres under the Proposed Action.

Pale and Dark Kangaroo Mouse

Construction impacts to the pale kangaroo mouse and dark kangaroo mouse under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Southern Power Line Route would result in the long-term removal of 198 acres of preferred habitat for the pale kangaroo mouse and 2,304 acres of preferred habitat for the dark kangaroo mouse, compared to 191 and 2,247 acres, respectively, under the Proposed Action.

Bighorn Sheep

As with the Proposed Action, the Northwest Main Access Route Alternative would not impact any bighorn sheep range.

Special Status Raptors

Construction impacts to special status raptor species under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Southern Power Line Route would result in the long-term removal of 3,242 acres of shrubland and woodland

habitats that may be used by raptors for nesting and foraging, compared with 3,184 acres under the Proposed Action.

Special Status Migratory Birds

Construction impacts to special status migratory bird species under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Southern Power Line Route would result in the long-term removal of 3,242 acres of shrubland and woodland habitats that may be used by special status migratory birds for nesting and foraging, compared with 3,184 acres under the Proposed Action. This would include 740 acres of impact to pinyon-juniper woodland habitat (compared with 746 acres under the Proposed Action) and 2,304 acres of impact to big sagebrush habitat (compared with 2,247 acres under the Proposed Action).

Operations, Maintenance, and Reclamation

Big Game

Short- and long-term operations, maintenance, and reclamation impacts to big game, particularly mule deer and pronghorn antelope, would be similar as those outlined under the Proposed Action. The Northwest Main Access Route Alternative would result in slightly greater impacts to year-long mule deer and pronghorn antelope range, as described above for construction-related impacts, but would possibly contribute to fewer collisions due to its distance away from a known migration route for mule deer.

Small Mammals, Predatory Mammals, and Reptiles

Impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

Migratory Birds (Except Eagles)

Impacts to migratory birds (except eagles) would be similar to those outlined under the Proposed Action.

Special Status Species

Southwestern Willow Flycatcher

As described in Section 3.9, there is no suitable habitat for the southwestern willow flycatcher in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Northwest Main Access Route Alternative, Southern Power Line Route would have no effect on this species.

Yellow-billed Cuckoo

As described in Section 3.9, there is no suitable habitat for the yellow-billed cuckoo in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Northwest Main Access Route Alternative, Southern Power Line Route would have no effect on this species.

Railroad Valley Springfish

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

Eagles

Impacts to eagles would be similar as those outlined under the Proposed Action.

Greater Sage-Grouse

Incorporating the Southern Power Line Route under this alternative, the reduced length of the power line in Greater Sage-Grouse habitat would result in reduced risk of power line collision and raptor predation, thereby reducing short-term effects relative to the Proposed Action.

During operations, up to 16 daily trips are anticipated on Green Springs Road and the rest of the existing main access route (Table 4.8-6), compared with 292 daily trips under the Proposed Action (Table 4.8-2). As a result, the Northwest Main Access Route Alternative, Southern Power Line Route would likely result in fewer noise impacts on the Belmont Junction Southwest, Seligman Canyon, Hoppe Spring West, and Monte Cristo West leks. However, up to 292 daily trips are anticipated on the Northwest Main Access Route during the operations phase of this alternative (Table 4.8-6). Therefore, this alternative may have comparatively greater noise impacts on the Southwest Pancake Summit and East Black Point leks, which would be located 1.1 and 1.6 miles, respectively, from the Northwest Main Access Route Alternative, Southern Power Line Route. However, no mine-traffic-related noise exceedances were reported for either lek during the two years of monitoring at the Pan Mine, either during construction or operation (SWCA 2014, 2016). Considering the topographic barriers and vegetation, the anticipated intermittent traffic conditions, and the lack of traffic-related noise exceedances from the Pan Mine traffic thus far, noise exceedances due to Gold Rock Mine Project-related traffic at the East Black Point Lek and Southwest Pancake Summit Lek under this alternative are unlikely.

The mine facilities for the Gold Rock Mine Project would be located more than 3.2 miles from active leks, including Cathedral lek. At this distance, mining-related noise is not expected to impact Greater Sage-Grouse using active leks in the region.

Other short- and long-term impacts to Greater Sage-Grouse during the operations, maintenance, and reclamation phases of this alternative would be the same as those described above under the Proposed Action.

Pygmy Rabbit

Operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

Special Status Bats

Operations, maintenance, and reclamation impacts to special status bat species under this alternative would be similar to those described for the Proposed Action.

Pale and Dark Kangaroo Mouse

Operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

Bighorn Sheep

As with the Proposed Action, the Northwest Main Access Route Alternative would not impact any bighorn sheep range.

Special Status Raptors

Operations, maintenance, and reclamation impacts to special status raptor species would be similar to those described above for the Proposed Action.

Special Status Migratory Birds

Operations, maintenance, and reclamation impacts to special status migratory birds would be similar to those described above for the Proposed Action.

4.9.8 Modified County Road Re-Route Alternative (Alternative 6)

Under this alternative, only existing roads would be used and no new road construction would occur along the county road re-route. No disturbance would occur. However, in the future, if White Pine County decides to upgrade the roads on the re-route, approximately 8 acres of GHMA and 18 acres of OHMA would be disturbed. In comparison, under the Proposed Action, construction and widening associated with the county road re-route would disturb up to approximately 9 acres of GHMA and 17 acres of OHMA. Details on impacts to wildlife under the Modified County Road Re-Route Alternative are provided below. Figure 4.9-5 shows the Modified County Road Re-Route Alternative in relation to wildlife resources.

Construction

Big Game

Construction-related impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action, with the exception that if White Pine County decides to widen the road, this alternative would result in impacts to approximately 1 less acre of year-round mule deer and pronghorn antelope range. Disturbance acres to mule deer crucial winter and winter range would be similar to those described for the Proposed Action.

Small Mammals, Predatory Mammals, and Reptiles

Short-term construction-related impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

Migratory Birds (Except Eagles)

Construction-related impacts to migratory birds (except eagles), would be similar to those outlined under the Proposed Action.

Special Status Species

Southwestern Willow Flycatcher

As described in Section 3.9, there is no suitable habitat for the southwestern willow flycatcher in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Modified County Road Re-Route Alternative would have no effect on this species.

Yellow-billed Cuckoo

As described in Section 3.9, there is no suitable habitat for the yellow-billed cuckoo in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Modified County Road Re-Route Alternative would have no effect on this species.

Railroad Valley Springfish

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

Eagles

Construction-related impacts to eagles would be similar to those outlined under the Proposed Action, and similar indirect impacts including potential displacement are anticipated.

Greater Sage-Grouse

Under this alternative, the components of the Modified County Road Re-Route Alternative would be the same distance from leks as described for the Proposed Action in Table 4.9-3 and Table 4.9-4; therefore, noise impacts on leks would be the same as described for the Proposed Action. Under this alternative, only existing roads would be used for the county road re-route, and no new road construction would occur; therefore, no PHMA, GHMA, or OHMA would be disturbed by road construction along the county road re-route. In the future, if White Pine County decides to upgrade the roads along the re-route, approximately 8 acres of GHMA and 18 acres of OHMA would be disturbed. In comparison, under the Proposed Action, construction and widening associated with the proposed county road re-route would disturb up to approximately 9 acres of GHMA and 17 acres of OHMA. Other effects to Greater Sage-Grouse would be similar to those under the Proposed Action.

Pygmy Rabbit

Construction impacts to the pygmy rabbit under this alternative would be similar to those under the Proposed Action. The Modified County Road Re-route Alternative would result in the long-term removal of 2,244 acres of big sagebrush habitat, compared to 2,247 acres under the Proposed Action.

Special Status Bats

Construction impacts to special status bat species under this alternative would be similar to those under the Proposed Action.

Pale and Dark Kangaroo Mouse

Construction impacts to the pale kangaroo mouse and dark kangaroo mouse under this alternative would be similar to those under the Proposed Action. The Modified County Road Re-route Alternative would result in the long-term removal of 194 acres of preferred habitat for the pale kangaroo mouse and 2,244 acres of preferred habitat for the dark kangaroo mouse, compared to 191 and 2,247 acres under the Proposed Action, respectively.

Bighorn Sheep

As with the Proposed Action, the Modified County Road Re-route Alternative would not impact any bighorn sheep range.

Special Status Raptors

Construction impacts to special status raptor species under this alternative would be similar to those under the Proposed Action.

Special Status Migratory Birds

Construction impacts to special status migratory bird species under this alternative would be similar to those under the Proposed Action.

Operations, Maintenance, and Reclamation

Big Game

Short- and long-term operations, maintenance, and reclamation impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action. The Modified County Road Re-route Alternative would result in slightly greater impacts to year-long mule deer and pronghorn antelope range, as described above for construction-related impacts.

Small Mammals, Predatory Mammals, and Reptiles

Impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

Migratory Birds (Except Eagles)

Impacts to migratory birds (except eagles) would be similar to those outlined under the Proposed Action.

Special Status Species

Southwestern Willow Flycatcher

As described above for the Proposed Action, this alternative would have no effect on the southwestern willow flycatcher.

Yellow-billed Cuckoo

As described above for the Proposed Action, this alternative would have no effect on the yellow-billed cuckoo.

Railroad Valley Springfish

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

Eagles

Impacts to eagles would be similar to those outlined under the Proposed Action.

Greater Sage-Grouse

Impacts to Greater Sage-Grouse during the operations, maintenance, and reclamation phases of this alternative would be similar to those described above under the Proposed Action.

Pygmy Rabbit

Operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

Special Status Bats

Operations, maintenance, and reclamation impacts to special status bat species under this alternative would be similar to those described for the Proposed Action.

Pale and Dark Kangaroo Mouse

Operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

Bighorn Sheep

As with the Proposed Action, the Modified County Road Re-route Alternative would not impact any bighorn sheep range.

Special Status Raptors

Operations, maintenance, and reclamation impacts to special status raptors would be similar to those described above for the Proposed Action.

Special Status Migratory Birds

Operations, maintenance, and reclamation impacts to special status migratory birds would be similar to those described above for the Proposed Action.

4.9.9 Western Tailings Facility Alternative (Alternative 7)

Under this alternative, impacts to wildlife resources would be similar in types, intensity and duration to those described for the Proposed Action, except that the more compact facility footprint would result in fewer acres of disturbance to mule deer and pronghorn antelope habitat, slightly more disturbance to raptor nests (except eagles), slightly less potential to indirectly impact active eagle nests, and less disturbance to Greater Sage-Grouse PHMA, slightly more disturbance to GHMA, and more disturbance to OHMA. Moving the TSF would result in 1,522 acres of surface disturbance in mapped mule deer crucial winter range, which is approximately 744 fewer acres of mule deer crucial winter range than under the Proposed Action. Details on impacts to all wildlife species categories analyzed under the Proposed Action are provided in the following sections. Figure 4.9-6 shows the Western Tailings Storage Facility Alternative in relation to wildlife resources.

Construction

Big Game

Construction-related impacts to big game, particularly mule deer and pronghorn antelope, would differ from those outlined under the Proposed Action in that there would be approximately 353 fewer acres of surface disturbance to mule deer range (744 fewer acres of disturbance to crucial winter range, but 391 more acres of disturbance to year-round range). Moving the fence line under this alternative would retain access to 267 acres of mule deer crucial winter range that would have been within the fence and between the facilities under the Proposed Action and 478 acres that would have been within the fence and covered by facility footprint under the Proposed Action. The Western Tailings Facility Alternative would also result in approximately 139 fewer acres of surface disturbance to year-round pronghorn antelope range. Under this alternative's more compact facility layout, no haul roads would be located east of the pit, further minimizing the risk of vehicle-wildlife collision within mule deer crucial winter range. Therefore, in terms of impacts to mule deer and pronghorn antelope range, there would be an overall net benefit from implementing this alternative over the Proposed Action.

Small Mammals, Predatory Mammals, and Reptiles

Construction-related impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

Migratory Birds (Except Eagles)

Construction-related impacts to migratory birds (except eagles) would be similar to those outlined under the Proposed Action, with the exception of impacting approximately 127 fewer acres of woodland and shrubland habitat.

Special Status Species

Southwestern Willow Flycatcher

As described in Section 3.9, there is no suitable habitat for the southwestern willow flycatcher in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Western Tailings Storage Facility Alternative would have no effect on this species.

Yellow-billed Cuckoo

As described in Section 3.9, there is no suitable habitat for the yellow-billed cuckoo in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Western Tailings Storage Facility Alternative would have no effect on this species.

Railroad Valley Springfish

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

Eagles

Construction-related impacts to eagles would be similar to those outlined under the Proposed Action, with slightly less potential to indirectly impact active eagle nests because the tailings facility would be shifted west farther from the active eagle nest on Meridian Ridge. In addition, approximately 10 fewer transmission line poles would be located in sections with active eagle nests.

Greater Sage-Grouse

Under this alternative, the components of the Western Tailings Facility Alternative would be the same distance from leks as described for the Proposed Action in Table 4.9-3 and Table 4.9-4; therefore, noise impacts on leks would be the same as described for the Proposed Action. Surface disturbance would impact approximately 1,149 acres of PHMA; 1,704 acres of GHMA; and 539 acres of OHMA. In comparison, approximately 1,782 acres of PHMA;1,641 acres of GHMA; and 109 acres of OHMA would be disturbed under the Proposed Action (Table 4.9-5). Approximately 633 fewer acres of PHMA, approximately 63 more acres of GHMA, and approximately 430 more acres of OHMA would be disturbed under the Western Tailings Storage Facility Alternative. Other effects to Greater Sage-Grouse would be the same as under the Proposed Action.

Pygmy Rabbit

Construction impacts to the pygmy rabbit under this alternative would be similar to those under the Proposed Action. The Western Tailings Facility Alternative would result in the long-term removal of 2,141 acres of big sagebrush habitat, compared to 2,247 acres under the Proposed Action.

FIGURE 4.9-6
WILDLIFE IMPACT ANALYSIS, WESTERN TAILINGS STORAGE FACILITY ALTERNATIVE

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GOLD ROCK MINE PROJECT

MAPPED DATE: 9/15/2016

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Basemap Source: ESRI World Shaded Relief Map Service
Sage-Grouse Management Category Data Source: U.S. Geological Survey, Western Ecological Research Center, Dixon Field Station, Dixon, CA. Nevada Sagebrush Ecosystem Program, Carson City, NV (August 2014).

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Special Status Bats

Construction impacts to special status bat species under this alternative would be similar to those under the Proposed Action. The Western Tailings Facility Alternative would result in the long-term removal of 3,057 acres of shrubland and woodland habitat that may be used by bats for foraging and roosting, compared with 3,184 acres under the Proposed Action.

Pale and Dark Kangaroo Mouse

Construction impacts to the pale kangaroo mouse and dark kangaroo mouse under this alternative would be similar to those under the Proposed Action. The Western Tailings Facility Alternative would result in the long-term removal of 316 acres of preferred habitat for the pale kangaroo mouse and 2,141 acres of preferred habitat for the dark kangaroo mouse, compared to 191 and 2,247 acres under the Proposed Action, respectively.

Bighorn Sheep

As with the Proposed Action, the Western Tailings Facility Alternative would not impact any bighorn sheep range.

Special Status Raptors

Construction impacts to special status raptor species under this alternative would be similar to those under the Proposed Action. The Western Tailings Facility Alternative would result in the long-term removal of 3,057 acres of shrubland and woodland habitats that may be used by raptors for nesting and foraging, compared with 3,184 acres under the Proposed Action.

Special Status Migratory Birds

Construction impacts to special status migratory bird species under this alternative would be similar to those under the Proposed Action. The Western Tailings Facility Alternative would result in the long-term removal of 3,057 acres of shrubland and woodland habitats that may be used by special status passerines for nesting and foraging, compared with 3,184 acres under the Proposed Action. This would include 599 acres of impact to pinyon-juniper woodland habitat (compared with 746 acres under the Proposed Action) and 2,141 acres of impact to big sagebrush habitat (compared with 2,247 acres under the Proposed Action).

Operations, Maintenance, and Reclamation

Big Game

Short- and long-term operations, maintenance, and reclamation impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action. The Western Tailings Facility Alternative would result in slightly greater impacts to year-round mule deer and pronghorn antelope range, as described above for construction-related impacts.

Small Mammals, Predatory Mammals, and Reptiles

Impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

Migratory Birds (Except Eagles)

Impacts to migratory birds (except eagles) would be similar to those outlined under the Proposed Action.

Special Status Species

Southwestern Willow Flycatcher

As described above for the Proposed Action, this alternative would have no effect on the southwestern willow flycatcher.

Yellow-billed Cuckoo

As described above for the Proposed Action, this alternative would have no effect on the yellow-billed cuckoo.

Railroad Valley Springfish

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

Eagles

Impacts to eagles would be similar to those outlined under the Proposed Action.

Greater Sage-Grouse

Impacts to Greater Sage-Grouse during the operations, maintenance, and reclamation phases of this alternative would be similar to those described above under the Proposed Action, except that the Western Tailings Storage Facility Alternative mine area fence line would cross approximately 0.4 mile more of PHMA and 1.5 fewer miles of GHMA than the Proposed Action fence line would cross.

Pygmy Rabbit

Operations, maintenance, and reclamation impacts to pygmy rabbits would be similar to those described above for the Proposed Action.

Special Status Bats

Operations, maintenance, and reclamation impacts to special status bat species under this alternative would be similar to those described for the Proposed Action.

Pale and Dark Kangaroo Mouse

Operations, maintenance, and reclamation impacts to pale and dark kangaroo mice would be similar to those described above for the Proposed Action.

Bighorn Sheep

As with the Proposed Action, the Western Tailings Facility Alternative would not impact any bighorn sheep range.

Special Status Raptors

Operations, maintenance, and reclamation impacts to special status raptors would be similar to those described above for the Proposed Action.

Special Status Migratory Birds

Operations, maintenance, and reclamation impacts to special status migratory birds would be similar to those described above for the Proposed Action.

4.9.10 No Action Alternative (Alternative 8)

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no associated project impacts on wildlife resources excluding the previously authorized exploration activities. Impacts of the previously authorized exploration activities were described in the EA for those activities (BLM 2012j). Existing disturbances and current trends for wildlife populations and habitats in the area would continue along current trajectories.

4.9.11 Preferred Alternative (Alternative 9)

Impacts to wildlife from implementation of the Preferred Alternative would be similar in types, intensity, and duration to impacts described for the Proposed Action, except:

- Construction of a power transmission line and maintenance road along the shorter Southern Power Line Route would result in fewer acres of surface disturbance in PHMA and less potential direct and indirect impact to Greater Sage-Grouse or their habitat through raven or raptor predation along the power line;
- Construction or widening of road segments to establish the Northwest Main Access Route would result in more acres of surface disturbance in mapped year-round range for mule deer and pronghorn antelope;
- Use of the Northwest Main Access Route would likely contribute to fewer wildlife-vehicle collisions along Green Springs Road, especially related to mule deer along the Ruby herd's migration route and would minimize project-related noise impacts within 0.25-mile of active Greater Sage-Grouse leks;
- Use of the Modified County Road Re-Route, where only existing roads would be used for the county road re-route and no new road construction would occur, would result in slightly less disturbance to mapped year-round range for mule deer and antelope and GHMA.

Construction of a more compact facility footprint associated with the Western Tailings Storage Facility would result in fewer acres of surface disturbance in mapped mule deer crucial winter range and PHMA, slightly more surface disturbance in GHMA, slightly more disturbance to raptor nests (except eagles), and slightly less potential to indirectly impact active eagle nests.

Details on impacts to all wildlife species categories analyzed under the Proposed Action are provided in the following sections for the Preferred Alternative. Figure 4.9-7 shows the Preferred Alternative in relation to wildlife resources.

Construction

Big Game

Construction-related impacts to big game, particularly mule deer and pronghorn antelope, would differ from those outlined under the Proposed Action in that approximately 313 fewer acres of disturbance would occur to mule deer range (744 fewer acres of disturbance to crucial winter range, but 431 more acres of disturbance to year-round range).

Under the Preferred Alternative, use of the Northwest Main Access Route would likely contribute to fewer big game collisions than use of the main access route under the Proposed Action. One factor that may contribute to fewer collisions is the greater distance between the Northwest Main Access Route and the Ruby mule deer herd's migration corridor, which follows Green Springs

Road south from US 50. In contrast, the main access route under the Proposed Action would follow Green Springs Road south of US 50.

Although Midway could direct commercial traffic associated with the mine to use the Northwest Main Access Route, Green Springs Road would still remain open to vehicular traffic. Therefore, temporary and short-term impacts due to collisions and traffic noise on Green Springs Road would still occur under the Preferred Alternative, though at a reduced level relative to the Proposed Action. Traffic on Green Springs Road would include up to 28 daily trips during construction (Table 4.8-6), compared with 354 daily trips under the Proposed Action (Table 4.8-2). Under this alternative's more compact facility layout, no haul roads would be located east of the pit, further minimizing the risk of vehicle-wildlife collision within mule deer crucial winter range.

Overall, impacts to big game would be short-term during construction.

Small Mammals, Predatory Mammals, and Reptiles

Short-term construction-related impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

Migratory Birds (Except Eagles)

Construction-related impacts to migratory birds (except eagles), would be similar to those outlined under the Proposed Action, and the same amount of disturbance to nests is anticipated, with the exception of impacting approximately 78 fewer acres of woodland and shrubland habitat.

Special Status Species

Southwestern Willow Flycatcher

As described in Section 3.9, there is no suitable habitat for the southwestern willow flycatcher in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Preferred Alternative would have no effect on this species.

Yellow-billed Cuckoo

As described in Section 3.9, there is no suitable habitat for the yellow-billed cuckoo in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Preferred Alternative would have no effect on this species.

Railroad Valley Springfish

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

Eagles

Construction-related impacts to eagles would be similar to those outlined under the Proposed Action, with slightly less potential to indirectly impact active eagle nests because the Western Tailings Storage Facility would be shifted west farther from the active eagle nest on Meridian Ridge. In addition, following the shorter Southern Power Line Route, approximately 10 fewer transmission line poles would be located in sections with active eagle nests.

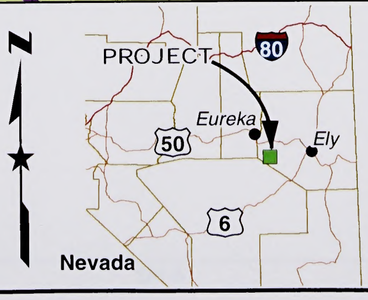
FIGURE 4.9-7
WILDLIFE IMPACT ANALYSIS, PREFERRED ALTERNATIVE

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 10/18/2017

MAIN MAP: 0 0.7 1.4 Miles

INSET MAP: 0 3.3 6.6 Miles



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Basemap Source: ESRI World Shaded Relief Map Service
Sage-Grouse Management Category Data Source: U.S. Geological Survey, Western Ecological Research Center, Dixon Field Station, Dixon, CA. Nevada Sagebrush Ecosystem Program, Carson City, NV (August 2014).

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Greater Sage-Grouse

By following the shorter Southern Power Line Route, the proposed power transmission line would be located outside of PHMA, would cross less GHMA, and would be more than 4 miles from any lek, minimizing direct and indirect impacts to Greater Sage-Grouse and its habitat. Similar to the Proposed Action, under this alternative, if a second water well is needed, the distribution power line to that well would be located in PHMA.

Greater Sage-Grouse avoidance of habitat within 1,968 feet (600 meters) of project-related power lines outside the Plan area could occur within approximately 517 acres of PHMA, 736 acres of GHMA, and 979 acres of OHMA compared to approximately 2,299 acres of PHMA, 1,390 acres of GHMA, and 149 acres of OHMA under the Proposed Action (Section 4.9.3). Compared to the Proposed Action, the result is approximately 1,782 fewer acres of PHMA (a 78 percent decrease) and approximately 655 fewer acres of GHMA (a 47 percent decrease) of habitat within 1,968 feet (600 meters) of power lines.

With regard to noise impacts to Greater Sage-Grouse, under this alternative the proposed mining facilities would be the same distance from leks as described for the Proposed Action and shown in Table 4.9-3 and Table 4.9-4. Under this alternative, Midway would direct commercial traffic associated with the Gold Rock Mine to use the Northwest Main Access Route (following Southern Power Line Route) to access the site (Figure 4.9-7), rather than the Proposed Action main access route (Figure 1.1-1). Use of this alternative main access route would minimize effects to Greater Sage-Grouse using leks in the vicinity of Green Springs Road (Figure 4.9-3, Figure 4.9-7).

Under this alternative, minimal traffic related to the Gold Rock Mine Project is anticipated on Green Springs Road. Consequently, minimal project-related noise impacts to leks along Green Springs Road are anticipated, and no baseline noise monitoring would be conducted along Green Springs Road under this alternative.

This alternative main access route would include the Pan Mine access road. The Pan Mine access road was designed in coordination with NDOW and the BLM to use topographic features as noise barriers to minimize impacts on the two known active leks in the area (Southwest Pancake Summit and East Black Point leks). Midway conducted baseline noise monitoring at these two leks during the Greater Sage-Grouse breeding season as part of the NEPA environmental review and approval for the Plan of Operations for the Pan Mine. At the time of writing of this FEIS, Midway continues to conduct noise monitoring as required at the East Black Point lek during the Greater Sage-Grouse breeding season.

Noise monitoring and mitigation for the Pan Mine includes a noise limit of 10 dBA over ambient, and this noise limit is proposed for the Gold Rock Mine Project. Patricelli et al. (2013, undated) used traffic noise data to extrapolate distances at which noise levels would diminish to 10 dBA above ambient levels on roads. Data were collected in an oil well field in Wyoming, near roads with intermittent traffic conditions (one vehicle passing at a time rather than a steady stream of vehicles) (Patricelli et al. 2013, undated).

Based on these studies, noise would be expected to attenuate to 10 dBA above ambient at a distance of 0.7 to 1.1 miles from the source, assuming ambient noise levels ranging from 22 dBA to 16 dBA, respectively. Under conditions of cylindrical spreading, such as temperature inversions, noise would be expected to attenuate to 10 dBA above ambient at a distance of 1.1 to 2.1 miles from the source, assuming ambient noise levels ranging from 22 dBA to 16 dBA, respectively. Neither of these scenarios account for topographic barriers and vegetation, both of which would be expected to attenuate noise further.

The Southwest Pancake Summit and East Black Point leks are located 1.1 and 1.6 miles, respectively, from the Pan Mine access road, which would be part of the Northwest Main Access Route under the Preferred Alternative for the Gold Rock Mine Project. Intermittent traffic conditions are expected along the Northwest Main Access Route Alternative, with up to 354 daily trips during the construction phase and 292 daily trips during the operations phase (Table 4.8-6). Given the Patricelli et al. (2013, undated) data described in Section 4.9.6, the distance of the leks from the alternative main access route and the anticipated traffic conditions, project-related traffic noise levels are anticipated to be at or below 10 dBA above ambient at both of the leks under normal conditions using an ambient level of 22, 20, or 16 dBA. Under conditions of cylindrical spreading, such as during temperature inversions, the Patricelli data suggest that exceedances are not expected at either lek if the ambient noise level is 22 dBA. Using an ambient level of 20 dBA, exceedances may occur at the Southwest Pancake Summit lek under these conditions. Exceedances could occur at both leks using an ambient level of 16 dBA. However, the Patricelli data do not account for topographic barriers and vegetation, which are both present between the Pan access road and the two leks. Given the presence of topography and vegetation, exceedances at the two leks are unlikely.

As part of the Pan Mine EIS (BLM 2013c), baseline ambient noise monitoring was conducted at the Southwest Pancake Summit and East Black Point leks. The monitoring involved a longer monitoring period (from three hours prior to sunrise to three hours after sunrise rather than one hour prior to sunrise to three hours after sunrise) and reported L_{90} A-weighted values at the request of NDOW and the BLM based on existing scientific information (BLM 2013c). Monitoring results indicated that ambient noise levels (L_{90}) at the two leks were 19 dBA and 18 dBA, respectively (J.C. Brennan 2013a,b).

Additionally, noise modeling was performed for the Pan Mine FEIS (BLM 2013c) to assess potential impacts from project-related noise. For the Pan Mine noise modeling, noise specialists used the FHWA Roadway Construction Noise Model (BLM 2013c). Appendix A of the FHWA Roadway Construction Noise Model User's Guide (FHWA 2006) identifies best practices for calculating estimated noise shielding, ranging from 3 dBA for noise barriers or obstructions (for example, dirt mounds) that just break the line-of-site between the noise source and the receptor (for example, a lek) to 8 dBA for a solid barrier located close to the source. For the Pan Mine FEIS, modelers included a conservative value of 4.8 dB to simulate the average topographic shielding effect (BLM 2013c).

The Pan Mine noise modeling assessed potential impacts of three noise scenarios on the closest lek: road construction; open-pit mining; and access road travel. The access road travel assessment is most applicable to the scenario expected under the Preferred Alternative. The original modeling was conducted using L_{eq} compared to L_{90} plus 10 as the threshold. This modeling showed that the most common noise modeled from the access road traffic was nearly at the threshold (at the Southwest Pancake Summit lek) with a potential exceedance of 0.9 dBA. Comparing the ambient noise in L_{eq} to modeled noise levels in L_{eq} results in a noise calculation of 10 dBA below ambient at this lek. Given the distances from the leks as described above, and the distances for noise to drop off based on Patricelli's recommendations, the authors of the Pan Mine noise modeling study did not predict any noise exceedances at either lek.

Noise monitoring conducted for the Pan Mine during construction in 2014 and operation in 2015 did not, in fact, detect any noise threshold exceedances related to traffic on the mine access road (SWCA 2014, 2016). Considering the topographic barriers and vegetation, the anticipated intermittent traffic conditions, and the lack of traffic-related noise exceedances from the Pan Mine

traffic thus far, noise exceedances due to Gold Rock Mine Project-related traffic at the East Black Point Lek and Southwest Pancake Summit Lek under this alternative are unlikely.

Although Midway could direct commercial traffic associated with the Gold Rock Mine to use the Northwest Main Access Route, Green Springs Road would remain open to vehicular traffic. Up to 28 daily trips are anticipated on Green Springs Road during construction under this alternative (Table 4.8-6), compared to up to 354 daily trips under the Proposed Action (Table 4.8-2). This lower amount of traffic compared to the Proposed Action would likely result in fewer noise impacts on the active Belmont Junction Southwest and Seligman Canyon leks and the inactive Hoppe Spring West and Monte Cristo West leks.

The Preferred Alternative would include the Modified County Road Re-Route, where only existing roads would be used for the county road re-route and no new road construction would occur. In the future, if White Pine County decides to upgrade the roads along the re-route, approximately 8 acres of GHMA and 18 acres of OHMA would be disturbed. In comparison, under the Proposed Action, construction and widening associated with the county road re-route would disturb 1 more acre of GHMA and 1 less acre of OHMA. Other effects to Greater Sage-Grouse would be similar to those under the Proposed Action.

Overall, this alternative would result in direct, long-term impact to approximately 1,144 acres of PHMA under this alternative, which is 638 fewer acres (a 36 percent decrease) compared to the Proposed Action (Section 4.9.3). Surface disturbance would result in direct, long-term impact to approximately 1,695 acres of GHMA, which is 54 more acres (a 3 percent increase) compared to the Proposed Action.

Disturbance Calculations for Caps, Density, and Sagebrush Availability

Project-scale disturbance calculations were conducted by the BLM Nevada State Office in 2016 according to the methods presented in Appendix E of the GRSG LUPA (BLM 2015c). PHMA habitat is the only habitat category considered in the calculation. PHMA within the study area for the calculation totaled 58,592 acres. The 3 percent disturbance cap for the Gold Rock Mine Project study area is approximately 1,758 acres of PHMA (Section 3.9). The area of PHMA anticipated to be disturbed or removed under the Preferred Alternative would be 732 acres (1.25 percent of the disturbance cap study area). The combination of existing disturbance (1,096 acres) and new proposed disturbance (732 acres) totals approximately 1,828 acres, representing 3.12 percent of the project disturbance cap study area. Implementation of the Preferred Alternative for the Gold Rock Mine Project would exceed the 3 percent disturbance cap for the project disturbance cap study area; however, this project is applicable under the 1872 Mining Law, as amended, and cannot be deferred for this reason.

Pygmy Rabbit

Construction impacts to the pygmy rabbit under this alternative would be similar to those under the Proposed Action. The Preferred Alternative would result in the long-term removal of 2,169 acres of big sagebrush habitat, which is 78 fewer acres compared to the Proposed Action.

Special Status Bats

Construction impacts to special status bat species under this alternative would be similar to those under the Proposed Action. The Preferred Alternative would result in the long-term removal of 3,085 acres of shrubland and woodland habitat that may be used by bats for foraging and roosting, which is 99 fewer acres compared to the Proposed Action.

Pale and Dark Kangaroo Mouse

Construction impacts to the pale kangaroo mouse and dark kangaroo mouse under this alternative would be similar to those under the Proposed Action. The Preferred Alternative would result in the long-term removal of 319 acres of preferred habitat for the pale kangaroo mouse and 2,169 acres of preferred habitat for the dark kangaroo mouse, which is 128 more acres of pale kangaroo mouse habitat and 78 fewer acres of dark kangaroo mouse habitat compared to the Proposed Action.

Bighorn Sheep

As with the Proposed Action, the Preferred Alternative would not impact any bighorn sheep range.

Special Status Raptors

Construction impacts to special status raptor species under this alternative would be similar to those under the Proposed Action. The Preferred Alternative would result in the long-term removal of 3,085 acres of shrubland and woodland habitats that may be used by raptors for nesting and foraging, which is 99 fewer acres compared to the Proposed Action.

Special Status Migratory Birds

Construction impacts to special status migratory bird species under this alternative would be similar to those under the Proposed Action. The Preferred Alternative would result in the long-term removal of 3,085 acres of shrubland and woodland habitats that may be used by special status migratory birds for nesting and foraging, which is 99 fewer acres compared to the Proposed Action. This disturbance would include 596 acres of impact to pinyon-juniper woodland habitat (150 fewer acres compared to the Proposed Action) and 2,169 acres of impact to big sagebrush habitat (78 fewer acres compared to the Proposed Action).

Operations, Maintenance, and Reclamation

Big Game

Short- and long-term operations, maintenance, and reclamation impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action. The Preferred Alternative would result in slightly greater impacts to year-long mule deer and pronghorn antelope range, as described above for construction-related impacts, but would possibly contribute to fewer collisions due to its distance away from a known migration route for mule deer. The Preferred Alternative would also result in less potential disturbance to mule deer using crucial winter range by shifting the tailings storage facility to the west.

Small Mammals, Predatory Mammals, and Reptiles

Impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

Migratory Birds (Except Eagles)

Impacts to migratory birds (except eagles) would be similar to those outlined under the Proposed Action.

Special Status Species

Southwestern Willow Flycatcher

As described in Section 3.9, there is no suitable habitat for the southwestern willow flycatcher in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Preferred Alternative would have no effect on this species.

Yellow-billed Cuckoo

As described in Section 3.9, there is no suitable habitat for the yellow-billed cuckoo in or near the project area. Due to a lack of suitable habitat, this species is not expected to occur in the analysis area, and the Preferred Alternative would have no effect on this species.

Railroad Valley Springfish

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

Eagles

Impacts to eagles would be similar as those outlined under the Proposed Action.

Greater Sage-Grouse

Incorporating the Southern Power Line Route under this alternative, the reduced length of the power line in Greater Sage-Grouse habitat would result in reduced risk of power line collision and raptor predation, thereby reducing short-term effects relative to the Proposed Action.

During operations, up to 16 daily trips are anticipated on Green Springs Road and the rest of the existing main access route (Table 4.8-6), compared with 292 daily trips under the Proposed Action (Table 4.8-2). As a result, the Preferred Alternative would likely result in fewer noise impacts on the Belmont Junction Southwest, Seligman Canyon, Hoppe Spring West, and Monte Cristo West leks.

Up to 292 daily trips are anticipated on the Northwest Main Access Route during the operations phase of this alternative (Table 4.8-6). Therefore, this alternative may have comparatively greater noise impacts on the Southwest Pancake Summit and East Black Point leks, which are located 1.1 and 1.6 miles, respectively, from the Pan Mine access road that would be a part of the Northwest Main Access Route Alternative, Southern Power Line Route for the Gold Rock Mine Project. However, no mine traffic-related noise exceedances were reported for either lek during two years of monitoring at the Pan Mine, either during construction or operation (SWCA 2014, 2016). Considering the topographic barriers and vegetation, the anticipated intermittent traffic conditions, and the lack of traffic-related noise exceedances from the Pan Mine traffic thus far, noise exceedances due to Gold Rock Mine Project-related traffic at the East Black Point Lek and Southwest Pancake Summit Lek under this alternative are unlikely.

The mine facilities for the Gold Rock Mine Project would be located more than 3.2 miles from active leks, including Cathedral lek. At this distance, mining-related noise is not expected to impact Greater Sage-Grouse using active leks in the region.

Under the Preferred Alternative, 419 acres of long-term surface disturbance would not be reclaimed, compared to 458 acres under the Proposed Action (Table 2.4-1). Long-term surface disturbance that would not be reclaimed would include the pit expansion, one process pond, stormwater control facilities, sediment basins, and disturbance associated with the proposed

county road re-route construction and widening if White Pine County decides to upgrade the road. Of the 419 acres that would not be reclaimed under the Preferred Alternative, 334 acres disturbed during expansion of the pit would be permanently lost, as bare rock would be exposed. The remaining 85 acres that would not be reclaimed would revegetate through natural processes.

Overlaying the Preferred Alternative's 419 acres of long-term unreclaimed disturbance with 2014 USGS mapping (2014f), long-term unreclaimed disturbance would occur on 268 acres of PHMA and 109 acres of GHMA (Table 4.9-5). In comparison, under the Proposed Action long-term unreclaimed disturbance would occur on 301 acres of PHMA and 121 acres of GHMA (Table 4.9-5). This long-term unreclaimed disturbance represents residual direct surface disturbance impacts in mapped Greater Sage-Grouse habitat management areas, for which the proponent has committed to conduct voluntary offset mitigation as described in Section 4.9.12.

Other short- and long-term impacts to Greater Sage-Grouse during the operations, maintenance, and reclamation phases of this alternative would be the same as those described above under the Proposed Action.

Pygmy Rabbit

Operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

Special Status Bats

Operations, maintenance, and reclamation impacts to special status bat species under this alternative would be similar to those described for the Proposed Action.

Pale and Dark Kangaroo Mouse

Operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

Bighorn Sheep

As with the Proposed Action, the Northwest Main Access Route Alternative would not impact any bighorn sheep range.

Special Status Raptors

Operations, maintenance, and reclamation impacts to special status raptor species would be similar to those described above for the Proposed Action.

Special Status Migratory Birds

Operations, maintenance, and reclamation impacts to special status migratory birds would be similar to those described above for the Proposed Action.

4.9.12 Additional Monitoring and Mitigation

The following monitoring and mitigation measures would reduce and offset impacts on wildlife, including special status species.

Big Game – Mule Deer

Issue: Surface disturbance activities during construction of the proposed mine facilities would impact mapped mule deer crucial winter range.

Mitigation Measure W-1: Under all action alternatives, to offset mule deer crucial winter range lost through project-related activities, Midway could coordinate with NDOW to develop and implement reasonable mitigation measures and timelines. Mitigation measures could include monetary compensation and/or off-site habitat conservation or restoration of mule deer crucial winter range, as appropriate. Because locatable mineral mining is a nondiscretionary action, and mule deer is not a special status species, the BLM is not able to require such mitigation.

Effectiveness: The effectiveness in mitigating impacts to mule deer crucial winter range would depend on any conservation measures chosen.

Effects on other resources: Off-site mitigation could impact soils, vegetation, other wildlife resources, forest products and fuels, and range resources. Off-site mitigation is not anticipated to impact geology and minerals, paleontological resources, prime and unique farmlands, air quality, wild horses, cultural resources, Native American religious and traditional values, land use authorization and access, visual resources, recreation, environmental justice, or hazardous materials and wastes.

Issue: The proposed mine area fence would be located within mapped mule deer crucial winter range and could impact movement of mule deer through that mapped range.

Mitigation Measure W-2: Under all action alternatives except the Western Tailings Storage Facility Alternative, to minimize impacts to mule deer crucial winter range habitat through project-related activities, Midway would move the mine area perimeter fence on the eastern side of the project area closer to the mine facilities while maintaining a technically safe and secure distance from mine facilities. This shift in the fence would maintain access to a larger area of mule deer crucial winter range than the proposed mine area fence.

The Western Tailings Storage Facility Alternative would include movement of the fence.

Effectiveness: Moving the mine area fence line would maintain unrestricted access to a larger area of mule deer crucial winter range.

Effects on other resources: Moving the mine area fence would change site conditions from those used to model air quality impacts for the NEPA environmental analysis. If this mitigation measure is considered, Midway would perform air quality modeling that includes the proposed mitigation fence line among the parameters used to assess impacts to air quality. Moving the fence line would result in similar types, intensity, and duration of direct and indirect effects to soils and vegetation, though the measure would impact a smaller area during installation of the fence, and would maintain a larger area of unrestricted access for other wildlife, range and wild horse forage resources, forest products and fuels, Native American religious and traditional values, land use authorization and access, and recreation. The mitigation mine area fence would cross different areas of PHMA and GHMA than the proposed mine area fence. Moving the fence is not anticipated to impact geology and minerals, paleontological resources, prime and unique farmlands, cultural resources, visual resources, environmental justice, or hazardous materials and wastes.

Issue: The Plan area would be located within mapped crucial mule deer winter range. Exploration activities may occur throughout the Plan area, and related surface-disturbing activities could impact mule deer and its mapped crucial winter range.

Mitigation Measure W-3: Under all action alternatives, as recommended in the Ely District Approved Resource Management Plan (BLM 2008b), Midway would avoid performing surface-

disturbing exploration activities as appropriate in mule deer crucial winter range from November 1 to March 31.

Effectiveness: Implementing this mitigation measure would minimize impacts to mule deer during a critical season and to mule deer crucial winter range.

Effects on other resources: Implementing this mitigation measure could impact other wildlife resources and recreation by minimizing project-related activity in the mapped range. Adhering to the timing restriction is not anticipated to impact water resources, geology and minerals, paleontological resources, soils, prime and unique farmlands, air quality, vegetation, forest products and fuels, range resources, wild horses, cultural resources, Native American religious and traditional values, land use authorization and access, visual resources, environmental justice, or hazardous materials and wastes.

Special Status Wildlife – Greater Sage-Grouse

On-Site Monitoring and Mitigation

Issue: Under all action alternatives, no surface disturbance or mining activity would occur within 0.25 mile of a known lek (Table 4.9-3); however, noise from project-related traffic on the selected main access route during Greater Sage-Grouse breeding season could impact Greater Sage-Grouse near the project's main access route.

Mitigation Measure W-4: Under all action alternatives except the Northwest Main Access Route alternatives and the Preferred Alternative, Midway would coordinate with the BLM and NDOW to develop a noise monitoring and mitigation plan that outlines:

- Protocols as recommended in Appendix M of the GRSG LUPA (BLM 2015c) or best available science to collect ambient noise measurements in areas of existing and proposed development;
- Methods the proponent would use to manage project-related noise so that levels would not exceed 10 dBA above the measured ambient noise levels during the period of 1 hour before sunrise until 3 hours after sunrise at the perimeter of potentially affected leks during the active breeding season of March 1 through May 15, consistent with existing Pan Mine noise monitoring requirements (BLM 2013f);
- Strategies to differentiate between mine-related travel and other travel on the proposed main access route, if practical;
- Consideration of and correlation with available site-specific Greater Sage-Grouse lek survey data and habitat use information including currently contracted USGS studies; and
- Adaptive management and mitigation measures to be implemented in response to observations of noise levels higher than 10 dBA above observed ambient noise levels at lek perimeters.

Noise monitoring would be conducted at the active Seligman Canyon lek, which is located within 0.25 mile of the existing main access route.

The noise monitoring and mitigation plan would be approved by the BLM and put in place no later than 90 days after the signing of the Notice to Proceed for this project. Mitigation measures in the final noise monitoring and mitigation plan could include:

- Reducing vehicle speed limits on the selected main access route during the period from March 1 through May 15;
- Restricting the use of engine brakes during the breeding period from March 1 through May 15;
- Implementing noise-dampening measures on mine-related sources; or
- Scheduling deliveries and shift changes outside of the breeding period (March 1 to May 15 from 1 hour before sunrise to 3 hours after sunrise per BLM 2013f) and preventing mine-related traffic from using the selected main access route or Easy Junior Road between US 50 and the Gold Rock Mine Project during the breeding period.

If noise exceedances occur, mitigation measures would be implemented to limit noise to less than 10 dBA above ambient, consistent with MD SSS 2F and SSS 3E in the GRSG LUPA (BLM 2015c).

This noise monitoring and mitigation plan would be revisited and amended as necessary each year following the collection and review of all available data and resources. If, after 2 years of actual mining activity, noise monitoring data show that the proponent is in compliance with the mitigation measure, the BLM could consider discontinuing monitoring; however, if at some point during the life of the mine a change occurs that could lead to a significant increase in the noise level at a lek (for example, a significant change in processing method, equipment location or activity level), noise monitoring would be re-initiated.

Effectiveness: By implementing measures such as these, Midway would be able to monitor noise and ensure that traffic and other noise associated with the Gold Rock Mine Project is limited to 10 dBA above observed ambient noise levels at known active leks near the proposed main access route, and to minimize or eliminate noise impact to Greater Sage-Grouse during breeding activities.

Effects on other resources: Preventing mine-related traffic from using Easy Junior Road and Green Springs Road during the breeding period would negatively impact socioeconomic resources because it would unreasonably limit mine business operations. Implementing mitigation measures such as these is not anticipated to impact water resources, geology and minerals, paleontological resources, soils, prime and unique farmlands, air quality, vegetation, wildlife resources, range resources, forest products and fuels, wild horses, cultural resources, Native American religious and traditional values, land use access and authorization, visual resources, recreation, or hazardous and solid wastes.

Mitigation Measure W-5: Under the Northwest Main Access Route alternatives and Preferred Alternative, Midway would comply with noise limit requirements established for the Pan Mine access road. Midway would coordinate with the BLM and NDOW to develop and submit a noise monitoring and mitigation plan subject to BLM approval that addresses noise impacts from traffic associated with both the Pan Mine and the Gold Rock Mine Project that could impact the active Southwest Pancake Summit and East Black Point leks. These leks are located approximately 1.1 and 1.6 miles, respectively, from the Pan Mine access road that would be a part of the alternative main access route. This monitoring and mitigation plan would specify the steps that the operators of the Pan Mine and Gold Rock Mine Project would take to ensure that project-related noise levels at the two nearby leks would remain below 10 dBA above ambient.

This noise monitoring and mitigation plan would outline:

- Protocols as recommended in Appendix M of the GRSG LUPA (BLM 2015c) or best available science to collect ambient noise in areas of existing and proposed development;
- Methods the proponent would use to manage project-related noise so that levels would not exceed 10 dBA above the measured ambient noise levels during the period of 1 hour before sunrise until 3 hours after sunrise at the perimeter of potentially affected leks during the active breeding season of March 1 through May 15, consistent with existing Pan Mine noise monitoring requirements (BLM 2013f);
- Strategies to differentiate between mine-related travel and other travel on the proposed main access route, if practical;
- Consideration of and correlation with available site-specific Greater Sage-Grouse lek survey data and habitat use information including currently contracted USGS studies; and
- Adaptive management and mitigation measures to be implemented in response to observations of noise levels higher than 10 dBA above observed ambient noise levels at lek perimeters.

This noise monitoring and mitigation plan would be revisited and amended as necessary each year following the collection and review of all available data and resources. If, after 2 years of actual mining activity, noise monitoring data show that the proponent is in compliance with the mitigation measure, the BLM could consider discontinuing monitoring. However, if at some point during the life of the mine a change occurs that could lead to a significant increase in the noise level at a lek (for example, a significant change in processing method, equipment location or activity level), noise monitoring would be re-initiated.

Effectiveness: This measure would provide additional information to assess potential impacts from the addition of Gold Rock Mine Project traffic noise to Greater Sage-Grouse and its habitat at leks near the Northwest Main Access Route alternatives or Preferred Alternative.

Effects on other resources: Noise monitoring is not anticipated to impact water resources, geology and minerals, paleontological resources, soils, prime and unique farmlands, air quality, vegetation, wildlife resources, range resources, forest products and fuels, wild horses, cultural resources, Native American religious and traditional values, land use access and authorization, visual resources, recreation, or hazardous and solid wastes.

Mitigation Measure W-6: Under all action alternatives except the Northwest Main Access Route alternatives and the Preferred Alternative, Midway would provide at least one breeding season of baseline ambient noise data prior to beginning construction activities.

Under the Northwest Main Access Route alternatives and Preferred Alternative, the alternative main access route would include the Pan Mine access road. Midway has already collected baseline ambient noise data, as well as monitoring data during construction and operation, at leks located near the Pan Mine access road. Therefore, no additional baseline noise data collection would be required under the Northwest Main Access Route alternatives or Preferred Alternative.

Effectiveness: Collecting these data prior to construction would establish a site-specific ambient baseline. This measured ambient baseline forms the basis for effective noise monitoring and would provide additional information to assess potential impacts to Greater Sage-Grouse and its habitat at leks near the Proposed Action main access route.

Effects on other resources: Noise monitoring is not anticipated to impact water resources, geology and minerals, paleontological resources, soils, prime and unique farmlands, air quality, vegetation, wildlife resources, range resources, forest products and fuels, wild horses, cultural resources, Native American religious and traditional values, land use access and authorization, visual resources, recreation, or hazardous and solid wastes.

Issue: A proposed above-ground distribution power line from the mine area to the existing Easy Junior water supply well would cross PHMA, offering perching habitat for raptors or ravens and possibly impacting Greater Sage-Grouse and use of its habitat.

Mitigation Measure W-7: Surface disturbance in PHMA and GHMA is summarized in Table 4.9-5. Under all action alternatives, to mitigate impacts to Greater Sage-Grouse and use of its habitat, Midway would bury the distribution power line from the mine to the existing Easy Junior water supply well, if feasible, based on soil conditions and other technical aspects. A surface area approximately 20 feet wide would be disturbed along the length of the route. Burying this lower voltage power line would involve direct burial of a distribution power cable (i.e., 25 kV) and installation of in-ground 6-foot cubical junction boxes or "pull boxes" spaced every 1,000 feet to 5,000 feet. No maintenance road would be required or established. If burial of the power line from the mine to the Easy Junior well is technically feasible, and if the existing water pipeline would require replacement, the power line and water pipeline would be co-located and buried within the existing water pipeline corridor.

If burial of the power line is not technically feasible, Midway would install an above-ground power line and establish a two-track maintenance road along a route that would minimize new disturbance in or avoid Greater Sage-Grouse PHMA and GHMA. Where feasible, the power line route would be co-located with existing disturbance. Midway would use APLIC avian deterring design measures (APLIC 2006, 2012), BMPs (APLIC 2015), or best available technology to discourage birds from perching on power lines or poles. This proposed mitigation is consistent with GRSG LUPA MDs SSS 1B; MDs SSS 2C, SSS 3B, and SSS 4 regarding RDF GEN 11 and MD LR 10 (Appendix 1A).

Effectiveness: Burying this distribution power line and associated pull boxes would minimize impacts to Greater Sage-Grouse from predation by reducing perching habitat and indirect impacts due to Greater Sage-Grouse avoidance of habitat within 1,968 feet (600 meters) of above-ground power lines.

Under all action alternatives, surface disturbance caused by burial activities would be reclaimed to further minimize impacts to Greater Sage-Grouse habitat.

Under all action alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative, burying the distribution power line from the mine to the Easy Junior well would disturb approximately 9 acres of PHMA with no related disturbance in GHMA or OHMA. Under the Western Tailings Storage Facility Alternative and Preferred Alternative, burying the distribution power line would disturb approximately 12 acres of PHMA with no related disturbance in GHMA or OHMA. Under all action alternatives, burying the distribution line would result in 5 fewer acres of disturbance in PHMA (Table 4.9-7).

Table 4.9-7 Surface Disturbance That Would Result During Implementation of Mitigation Measures Related to Supplying Power to the Existing Easy Junior Water Supply Well

Alternative	With No Mitigation			With Mitigation: Burial			With Mitigation: Above-ground installation along a route that would minimize new disturbance in or avoid Greater Sage-Grouse PHMA and GHMA		
	PHMA (acres)	GHMA (acres)	OHMA (acres)	PHMA (acres)	GHMA (acres)	OHMA (acres)	PHMA (acres)	GHMA (acres)	OHMA (acres)
All action alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative	14	0	0	9	0	0	5	3	13
Western Tailings Storage Facility Alternative and Preferred Alternative	17	0	0	12	0	0	5	3	13

Note:
Acreage of disturbance was calculated using USGS August 2014 Greater Sage-Grouse Habitat Management Area Mapping (USGS 2014f).
Rounding of acreage results in total acreage discrepancies.

If the distribution power line from the mine to the Easy Junior well is installed above ground and a two-track maintenance road is established along a route that would minimize new disturbance in or avoid PHMA and GHMA, installation activities could disturb approximately 5 acres of PHMA, 3 acres of GHMA, and 13 acres of OHMA (Table 4.8-7). When compared to all alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative, this above-ground mitigation measure would result in approximately 9 fewer acres of disturbance in PHMA, with 3 more acres of disturbance in GHMA, and 13 more acres of disturbance in OHMA (Table 4.9-7). When compared to the Western Tailings Storage Facility Alternative and Preferred Alternative, this above-ground mitigation measure would result in 12 fewer acres of PHMA, 3 more acres of disturbance in GHMA, and 13 more acres of disturbance in OHMA (Table 4.9-7).

Effects on other resources: For the proposed distribution power line to the Easy Junior well, burying the power line would involve approximately 9 acres of surface disturbance, would impact previously disturbed soils and vegetation and could result in similar types, intensity, and duration of impact to undisturbed soils and vegetation resources as those identified for the Proposed Action. Excavation and surface disturbance activities associated with burial of the power line could result in types, intensity, and duration of impact similar to those identified for the Proposed Action for the following resources: geology and minerals, paleontological resources, other wildlife resources, range resources, forest products and fuels, wild horses, cultural resources, Native American religious and traditional values, visual resources, and recreation. Burying the power line is not anticipated to impact water resources, prime and unique farmlands, air quality, land use authorization and access, socioeconomics, environmental justice, or hazardous materials and wastes.

Implementing a mitigation measure of shifting the proposed above-ground route would result in approximately 20 acres of surface disturbance associated with installing power poles and establishing a two-track maintenance road, compared to 14 acres of disturbance under all action alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative and 17 acres of disturbance under the Western Tailings Storage Facility Alternative and Preferred Alternative. Shifting the above-ground distribution power line route to minimize new disturbance in or avoid PHMA and GHMA would result in types, intensity, and duration of impact to soils, vegetation, and land use authorization and access similar to those identified for the Proposed Action. This mitigation measure could result in types, intensity, and duration of impact similar to those identified for the Proposed Action for the following resources: geology and minerals,

paleontological resources, other wildlife resources, range resources, forest products and fuels, wild horses, cultural resources, Native American religious and traditional values, visual resources, and recreation. Shifting the above-ground distribution power line route is not anticipated to impact water resources, prime and unique farmlands, air quality, land use authorization and access, socioeconomic resources, environmental justice, or hazardous materials and wastes.

Issue: If a second water supply well is required, the proposed above-ground distribution power line to that well would cross PHMA, offering perching habitat for raptors or ravens and possibly impacting Greater Sage-Grouse and use of its habitat.

Mitigation Measure W-8: Under all action alternatives, if a second water supply well is required, Midway would bury the distribution power line from the existing Easy Junior water supply well to the second well, if feasible, based on soil conditions and other technical aspects. The second well would be located within 0.5 mile of the existing Easy Junior well. An area approximately 20 feet wide would be disturbed along the length of the route. Burying this power line would involve direct burial of a distribution power cable (i.e., 25 kV) and installation of in-ground 6-foot cubical junction boxes or "pull boxes" spaced every 1,000 feet to 5,000 feet. No maintenance road would be required or established.

Effectiveness: Burying this distribution power line and associated pull boxes would minimize impacts to Greater Sage-Grouse from predation by reducing perching habitat and indirect impacts due to Greater Sage-Grouse avoidance of habitat within 1,968 feet (600 meters) of above-ground power lines.

Under all action alternatives, burying the distribution power line to the second well would disturb approximately 1 acre of PHMA, compared to approximately 6 acres for the proposed above-ground line and maintenance road (Table 4.9-8). This surface disturbance would be reclaimed, which would help minimize impacts on Greater Sage-Grouse habitat.

Table 4.9-8 Surface Disturbance That Would Result During Implementation of Mitigation Measures Related to Supplying Power to the Possible Second Water Supply Well

Alternative	With No Mitigation			With Mitigation: Burial		
	PHMA (acres)	GHMA (acres)	OHMA (acres)	PHMA (acres)	GHMA (acres)	OHMA (acres)
All action alternatives	6	0	0	1	0	0

Note:
Acreage of disturbance was calculated using USGS August 2014 Greater Sage-Grouse Habitat Management Area Mapping (USGS 2014f).
Rounding of acreage results in total acreage discrepancies.

Under all action alternatives, installation of an above-ground distribution power line along a route other than a straight line between the existing well and proposed well, which was analyzed in the FEIS, would result in a longer distance and therefore more surface disturbance. Most of the habitat within 0.5 mile of the Easy Junior well is mapped as PHMA. More surface disturbance would impact more PHMA. Following such a route would not mitigate impacts to Greater Sage-Grouse habitat; therefore the BLM did not propose or analyze such a mitigation measure.

Effects on other resources: If a second water supply well is required, implementing a mitigation measure of burying this power line would result in approximately 1 acre of surface disturbance. This surface disturbance would result in types, intensity, and duration of impact to soils and vegetation resources similar to those identified for the Proposed Action. Excavation and surface disturbance activities associated with burial of the power line could result in types of impact similar

to those identified for the Proposed Action for the following resources: geology and minerals, paleontological resources, other wildlife resources, range resources, forest products and fuels, wild horses, cultural resources, Native American religious and traditional values, visual resources, and recreation. Burying the distribution power line to the second well is not anticipated to impact water resources, prime and unique farmlands, air quality, land use authorization and access, socioeconomics, environmental justice, or hazardous materials and wastes.

Off-Site Mitigation

Issue: Construction of the proposed mine facilities would involve surface disturbance within mapped Greater Sage-Grouse PHMA and GHMA.

Mitigation Measure W-9: Under all action alternatives, to offset residual (long-term unreclaimed) direct surface disturbance impacts to Greater Sage-Grouse PHMA and GHMA, Midway would provide voluntary off-site mitigation on lands near the proposed project area.

Table 4.9-9 presents acres of long-term surface disturbance that would not be reclaimed in PHMA and GHMA based on the GRSG LUPA (BLM 2015c).

Table 4.9-9 Residual Surface Disturbance Impacts To Greater Sage-Grouse Habitat

	Long-Term Surface Disturbance (Not Reclaimed)[2] in PHMA (acres)	Long-Term Surface Disturbance (Not Reclaimed)[2] in GHMA (acres)
Proposed Action	301	121
Northern Power Line Route Alternative	301	121
Southern Power Line Route Alternative	301	121
Northwest Main Access Route Alternative, Northern Power Line Route	301	121
Northwest Main Access Route Alternative, Southern Power Line Route	301	121
Modified County Road Re-Route Alternative	301	121
Western Tailings Storage Facility Alternative[1]	268	110
Preferred Alternative[1]	268	109

Notes:
Acreage of disturbance was calculated using USGS August 2014 Greater Sage-Grouse Habitat Management Area Mapping (USGS 2014f).
The values shown in this table indicate the number of acres of PHMA and GHMA within the areas that would not be reclaimed.

1 Under either the Western Tailings Storage Facility Alternative or the Preferred Alternative, a more compact facility layout would be constructed and stormwater control features and sediment basins would be installed in different locations, resulting in fewer acres of long-term surface disturbance that would not be reclaimed in PHMA and GHMA in comparison to the other action alternatives.

2 Long-term Surface Disturbance (Not Reclaimed) would include the 334-acre pit expansion, one 13-acre process pond converted to an evapotranspiration cell, stormwater control facilities, sediment basins, and disturbance associated with the proposed county road re-route construction and widening if White Pine County decides to upgrade the road (Figure 2.3-15). In total, 458 acres of surface disturbance would not be reclaimed under the Proposed Action (419 acres under the Preferred Alternative).

Under all action alternatives, the 334 acres disturbed during expansion of the pit would be permanently lost, as bare rock would be exposed. The remaining areas that would not be reclaimed would revegetate through natural processes. Sediment basins would remain in place to promote the potential post-mining land uses such as livestock grazing and wildlife use. The majority of the run-on diversion structures would also remain in place. The run-on diversion above the TSF and heap would be left in place and would continue to divert flow from the 100-year, 24-hour storm event around the reclaimed heap and process solution ponds.

The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (Table 2.3-8) and incorporated elements consistent with several Required Design Features and Management Decisions from the GRSG LUPA (BLM 2015c). Under all of the Gold Rock Mine Project action

alternatives, including the BLM Preferred Alternative, impacts to Greater Sage-Grouse habitat have been avoided and minimized to the extent practicable.

Prior to issuance of the GRSG LUPA in 2015, the BLM and the proponent identified and negotiated voluntary funding of offset mitigation for the direct impacts of residual (long-term unreclaimed) surface disturbance. This offset mitigation would be off-site on nearby federal lands at a ratio of 3 acres of restoration per 1 acre of residual (long-term unreclaimed) direct surface disturbance (3:1) in PHMA and 2 acres of restoration for each 1 acre of residual direct surface disturbance (2:1) in GHMA. The BLM coordinated with NDOW on this voluntary plan.

After issuance of the GRSG LUPA in 2015, the BLM and the proponent identified and considered another voluntary off-site mitigation option to offset residual direct surface disturbance impacts to Greater Sage-Grouse habitat by use of the Nevada Conservation Credit System (CCS) whereby the proponent would purchase credits on private lands for mitigation.

In accordance with a *Memorandum of Understanding between the BLM Nevada State Office and California State Office, and the Nevada Department of Conservation and Natural Resources, and the USFS Humboldt-Toiyabe National Forest* completed on April 1, 2016, the BLM coordinated with the SETT (see also Appendix 1A of this FEIS):

- The BLM added the SETT as a cooperating agency in this environmental review process.
- The BLM determined that the proposed project was consistent with the GRSG LUPA.
- The BLM analyzed CCS mitigation in at least one alternative (the Preferred Alternative) of the FEIS.
- The BLM and the proponent coordinated with the SETT in the development of a desktop analysis using the Habitat Quantification Tool (HQT, SEP 2016) and a site-specific analysis using the CCS tools, following the policies and procedures detailed in the HQT Scientific Methods Document and CCS Manual. Both the desktop analysis and site-specific analysis are described further below and in Appendix 1A of this FEIS.
- In considering the CCS, the BLM and the proponent examined off-site mitigation measures based initially on the results of the desktop analysis, and later, when available, on the results of the site-specific analysis.
- If the CCS is used, the proponent would obtain available credits prior to ground disturbance.
- Text in Appendix 1A of the FEIS discloses how net conservation gain would be quantified and achieved

In considering the CCS, the BLM and the proponent coordinated with the SETT in 2015 to calculate the number of debits (credit obligations) that would result from implementation of the Gold Rock Mine Project and to explore options for purchasing the corresponding number of permanent credits in the CCS Registry. Both of these processes are summarized below and described in more detail in Appendix 1A.

The CCS tools calculate term credit obligations and permanent credit obligations. Term credit obligations reflect temporary impacts (for example, short-term impacts and long-term impacts that would be reclaimed). The duration of the credit obligation is dependent on the duration of the proposed activity or type of disturbance. Permanent credit obligations are based on area and type of impact that would occur where no reclamation or rehabilitation is proposed (for example, long-term unreclaimed disturbance impacts). For this non-discretionary action, the BLM and the

proponent negotiated one mitigation option under which the proponent would purchase the final number of permanent credit obligations calculated for the Gold Rock Mine Project.

In 2016 the SETT conducted a desktop analysis of the Preferred Alternative to identify a preliminary number of credit obligations needed. Then a CCS-certified third-party verifier conducted requisite field surveys and applied the CCS tools using those data to identify final credit obligations. However, in 2016, no credits were available and estimation of cost per credit was not possible.

Also in 2016, the BLM identified firm acreage numbers for residual surface disturbance of Greater Sage-Grouse habitat due to the Gold Rock Mine Project (Table 4.9-9). The BLM also identified proposed habitat restoration project on federal lands nearby that have already undergone NEPA analysis where the voluntary, negotiated 3:1 PHMA and 2:1 GHMA offset mitigation might apply. A cost per acre of restoration treatment and associated monitoring was estimated. Based on this information, the proponent negotiated with the BLM to develop an offset mitigation option under which the proponent would voluntarily fund the implementation and monitoring of off-site restoration projects on federal lands nearby that have already undergone NEPA analysis. If this offset mitigation option were selected, the number of acres of residual disturbance within habitat management category to be mitigated would be based on best available site-specific science and proximity of off-site mitigation projects to the Gold Rock Mine Project. The CCS tools would be applied to proposed mitigation projects, and results would be considered in the offset mitigation implementation plan.

Best available site-specific science also would be used to determine existing Greater Sage-Grouse seasonal use and suitability in areas of proposed surface disturbance and identify possible mitigation measures. The off-site mitigation would occur at location(s) to be determined by the BLM in coordination with NDOW and the SETT. Improvements would be commensurate to the level of impacts, and preference would be given to treatments in close proximity to the project area that would benefit Greater Sage-Grouse known to use adjacent areas. Several watershed assessments are on-going in the region. Opportunities for habitat restoration within one of the assessment areas in which NEPA analysis is complete could be considered. Restoration treatment areas could be considered using the Fire and Invasives Assessment Tool (FIAT). These measures are consistent with GRSG LUPA MDs SSS 2B and SSS 3A.

The BLM would monitor the mitigation treatments for the life of the mine, with retreatment as needed using the proponent's funds earmarked for this purpose. Through application of the negotiated 3:1 and 2:1 ratio for mitigation, and monitoring and retreatment as needed, the mitigation would include provisions to ensure additionality, effectiveness and durability to account for any uncertainty as defined in the GRSG LUPA.

In 2017 the SETT updated the CCS tools and recalculated the credit obligations for the proposed project. At the time of writing of this FEIS, the availability and cost of a sufficient number of credits that could be purchased in proximity to the proposed project were uncertain.

Both offset mitigation options (use of the CCS and funding of other off-site restoration projects) are analyzed in the FEIS. The CCS tools would be applied to the selected mitigation option to provide additional information, where feasible. Implementation of either offset mitigation option would provide habitat improvements in PHMA and in GHMA, consistent with applicable laws and regulations. Consistency with the GRSG LUPA is documented in Appendix 1A of this FEIS.

The proponent would select one of the two voluntary offset mitigation options analyzed in this FEIS, or a combination thereof, prior to issuance of the ROD. The BLM would include a description

of the selected mitigation option in the ROD. Within 90 days of issuance of the ROD, the BLM and the proponent, in coordination with NDOW and the SETT, would develop an offset mitigation implementation plan for the selected mitigation option. This plan would document the total area to be mitigated and specify mitigation measure(s), site selection procedures, timing of implementation, monitoring methods, treatment effectiveness criteria, retreatment procedures and cost estimation. The BLM would finalize and approve the offset mitigation implementation plan no later than 90 days after issuance of the ROD.

Effectiveness: Either mitigation option (use of the CCS or funding the implementation and monitoring of other off-site restoration projects) could be effective in mitigating residual impacts to PHMA and GHMA.

Effects on other resources: Implementing some of these mitigation measures could negatively impact socioeconomic resources by impacting the ability of the Project to conduct its operations effectively. Impacts to water resources, soils, vegetation, other wildlife resources, forest products and fuels, and range resources related to off-site conservation or restoration activities could occur. Implementing such mitigation measures is not anticipated to impact geology and minerals, paleontological resources, prime and unique farmlands, air quality, wild horses, cultural resources, Native American religious and traditional values, land use authorization and access, visual resources, recreation, environmental justice, or hazardous materials and wastes.

Special Status Wildlife – Pygmy Rabbit

Issue: During baseline studies, sign of pygmy rabbit was observed in the north-northwest portion of the Study Area. Surface disturbance during exploration activities may impact pygmy rabbits during nesting or warren-rearing.

Mitigation Measure W-10: Under all action alternatives, when exploration activities in the vicinity of pygmy rabbit habitat identified in the north-northwest portion of the Plan area are scheduled to occur during the natal season (February 15 to July 1 based on the latitude at which the project area is located and information in Elias et al. (2006) and Estes-Zumpf and Rachlow (2009)), Midway would apply a 200-foot buffer to potential pygmy rabbit habitat, and would avoid that buffered area where practicable. If Midway could not avoid surface disturbance in pygmy rabbit habitat during the natal season, consultation with BLM and NDOW wildlife biologists would occur to develop avoidance strategies and mitigation techniques.

Effectiveness: By implementing mitigation measure W-10, potential direct impacts to pygmy rabbits and their habitat would be reduced.

Effects on other resources: Implementing mitigation measure W-10 is not anticipated to impact other resources.

Special Status Wildlife – Ferruginous Hawks

Issue: Surface disturbance activities may impact ferruginous hawks during nesting or brood-rearing. Ferruginous hawks may attempt to nest on project-related power poles.

Mitigation Measure W-11: Under all action alternatives, if ferruginous hawks are found to be nesting on the project power poles, Midway would coordinate with the BLM and NDOW to implement measures to encourage the nesting birds to relocate, if practicable. These measures could include providing alternate nest substrates such as artificial platforms where natural nest substrates are lacking. Artificial platforms, if used, would only be constructed outside of mapped Greater Sage-Grouse PHMA, GHMA, and OHMA.

Effectiveness: Encouraging ferruginous hawks to relocate from power poles could minimize impacts to ferruginous hawks from electrocution.

Effects on other resources: Providing alternate nest substrates for ferruginous hawks could negatively impact soils and vegetation resources in the area immediately surrounding the mitigation measure during installation. Providing alternate substrates, such as artificial nest platforms, could negatively impact other wildlife if the mitigation measures contribute to the expansion of the local raven population. Providing alternate nest substrates is not anticipated to impact water resources, geology and minerals, paleontological resources, prime and unique farmlands, air quality, other wildlife resources, forest products and fuels, range resources, wild horses, cultural resources, Native American religious and traditional values, land use authorization and access, visual resources, environmental justice, or hazardous materials and wastes.

4.10 RANGE RESOURCES

4.10.1 Analysis Areas

The analysis area for the Proposed Action, Northwest Main Access Route Alternative, Northern and Southern power line routes, Modified County Road Re-Route Alternative, and Western Tailings Storage Facility Alternative is:

- the Bull Corner/Poison Patch and Green Springs Valley grazing use areas in the Duckwater Allotment,
- the Monte Cristo Allotment,
- the West and East pastures of the South Pancake Allotment, and
- the 18 Mile House grazing use area and South Newark grazing pasture in the Newark Allotment.

The analysis area for the Northern and Southern power line route alternatives is the Proposed Action analysis area with one modification:

- No consideration of the 18 Mile House grazing use area, given that no surface disturbance is proposed in the area under this alternative.

The analysis area for the No Action Alternative is the approved, amended 2011 Exploration Plan area.

Allotments in the project area are shown on Figure 3.10-1.

4.10.2 Indicators

Impacts to range resources were evaluated by considering the following:

- Number of livestock allotments that occur within the analysis area, and the AUMs supported by the allotments, or livestock currently approved to use these areas;
- Acres of rangeland to be affected by the project;
- Acres of land within an allotment or pasture of an allotment to be affected by the project;
- Percentage of each allotment within the fenced portion of the analysis area that would be affected; and

- Estimated number of AUMs of forage lost in each affected allotment or pasture of an allotment.

An AUM is the amount of forage required to sustain a cow and a calf for one month, or approximately 1,000 pounds of forage.

4.10.3 Proposed Action (Alternative 1)

Anticipated environmental impacts to livestock and grazing resources include the loss of forage due to ground disturbance and restricted access to the fenced active mining areas for security and safety reasons. Access to water sources for livestock would not be an issue because the available water sources are outside the fenced mine area and disturbance areas and groundwater pumping and use would not affect available surface water sources. The anticipated impacts are described below.

When an area of BLM-administered land is devoted to a single public purpose, such as mineral production, AUMs are adjusted to reflect the area withdrawn from multiple use. These AUMs are lost until such time mining has ceased and reclamation has been successfully completed. At that time, the area is evaluated to determine if the AUMs can be returned. This approach would be applied for the Gold Rock Mine Project.

Construction

The primary impact on rangeland resources resulting from the Proposed Action would be the loss of access to vegetation or forage and land area within the fenced mine area for the life of the project. Additionally, an increase in vehicle use on public roads in the vicinity of the project would result in a proportionate increase in human activity and associated noise which may result in temporary disturbances to livestock. An increase in vehicle use on these roads also could result in an increase in the frequency of vehicle-livestock collisions, resulting in an increase in direct impacts to livestock including animal mortality. Midway's Applicant-Committed EPMs (Table 2.3-8) include posting and enforcing appropriate speed limits within the Plan area and installing cattle guards, which would minimize the risk of vehicle-livestock collisions.

It is likely that as a result of access restrictions in some areas, recreational use of some other areas would increase. An increase in recreational visitors in these other areas during the projected 10-year mining period could result in a proportionate increase in the number of dogs accompanying recreational visitors during that time, which could result in additional disturbances to livestock. Currently hunting is the most common recreational use of the area. Hunting seasons vary but typically are scheduled to occur between August and November, while most of grazing allotments on BLM land are permitted for use outside of the main hunting season. The effects to livestock would be of low intensity, temporary in duration, and primarily limited to the immediate areas near the roads used to access the project.

The 8,757-acre mine area is located within the Bull Corner/Poison Patch Grazing Use Area in the Duckwater Allotment and would be fenced, restricting sheep and cattle from accessing the active areas of the mine during construction and operation, resulting in loss of access to grazing lands. Installation of the mine area fence on the western and northern sides of the project area also would constrain passage along several historical livestock trailing corridors, which would require livestock handlers to shift routes farther west. The mine area fence would be removed during closure and livestock handlers could resume current practices. Section 4.10.12 describes mitigation regarding grazing permittees, including a mitigation measure (BLM coordination with

the grazing permittees and the proponent to identify opportunities for range improvement projects that could offset some short-term impacts), its effectiveness, and effects on other resources.

Proposed surface disturbance on approximately 3,550 acres in defined locations in the Plan area would result in removal of vegetation and long-term loss of forage resource. Of the approximately 3,550 acres of proposed disturbance in known locations, 140 acres would be located outside the fenced mine area and would be disturbed during water pipeline maintenance or replacement, entrance facility construction or maintenance, road construction or widening, and power line and well construction or maintenance.

In addition, exploration activities in unknown locations in the Plan area would result in approximately 400 acres of surface disturbance during the construction and operation of the mine. In total, approximately 3,950 acres would be disturbed.

Considering the loss of access to 8,757 acres of forage resource within the fenced mine area, along with loss of 140 acres of forage resource in known locations outside the fenced mine area and loss of forage resource on up to 400 acres due to exploration within the Plan area, approximately 9,300 acres of grazing land would be impacted.

The area that would be impacted includes 23 acres of 18 Mile House Use Area of the Newark allotment (less than 0.01 percent of the grazing use area); 8,847 acres of the Bull Corner/Poison Patch grazing use area (27 percent of the Bull Corner/Poison Patch grazing use area), 24 acres in the Green Springs Valley grazing use area (less than 0.01 percent of the Green Springs Valley grazing use area) and 4 acres of the South Pancake allotment (less than 0.01 percent of the West pasture) in the Duckwater allotment.

In order to calculate the approximate AUMs that would be impacted by the project, the BLM reviewed NRCS rangeland ecological site descriptions (ESDs) associated with the soil map units proposed to be impacted. For each ESD, the BLM selected the appropriate forage types based on animal forage preferences and developed average forage productivity factors. The BLM also evaluated the slope for each soil type and, where applicable, applied a slope factor to better estimate grazing use on some of the steeper slopes in the project area. Combining these productivity and slope factors, the BLM estimated the pounds of available forage within the impacted area. The BLM allows a 50 percent forage utilization rate on permitted grazing lands. Applying this percentage, the BLM calculated the available, usable forage within the impacted area. Assuming that 1,000 pounds of forage is needed to support one AUM, the BLM then calculated the total number of AUMs that would be impacted by the Proposed Action.

Proposed access restriction and surface disturbance would result in a temporary loss of 267 AUMs (less than 1 AUM in the Newark Allotment, 266 AUMs in the Bull Corner/Poison Patch grazing unit of the Duckwater Grazing Allotment, less than 1 AUM in the Green Springs Valley grazing unit of the Duckwater Grazing Allotment, and less than 1 AUM in the South Pancake Allotment) or approximately 4 percent of the active AUMs for the life of the mine (Table 4.10-1).

Table 4.10-1 Impacts To Grazing Allotments under the Proposed Action

Allotment	Grazing Area/Pasture	Total Area of Grazing Area/ Pasture Area (acres)	Total Active AUMs	Short-Term Impact Within Allotment[1] (acres)	Total Number of AUMs Lost to Short-Term Impact	Long-Term Impact (Not Reclaimed Disturbance) Within Allotment[2] (acres)	Total Number of AUMs Lost to Long-Term Disturbance (Not Reclaimed)	Permanent Loss Within Allotment (Pit Expansion) (acres)	Total Number of AUMs of Permanent Loss Within Allotment (Pit Expansion)
Newark Grazing Allotment	South Newark Grazing Area	15,901	535	0	0	0	0	0	0
	18 Mile House Grazing Area	38,822	1,204	23	<1	0	0	0	0
South Pancake Grazing Allotment	West Pasture	22,825	715	4	<1	0	0	0	0
Duckwater Grazing Allotment	Green Springs Valley	32,609	868	24	<1	0	0	0	0
	Bull Corner/ Poison Patch	73,901	3,503	8,847	266	458	16	334	11
	All Allotments	**168,157**	**14,795**	**8,897 (5%)**	**267 (4%)**	**458 (<1%)**	**16 (<1%)**	**334 (<1%)**	**11 (<1%)**

Abbreviations:
AUM = animal unit month

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The actual quantity of forage lost would also depend on other factors such as the type of plant communities impacted, the availability of key forage species such as native perennial bunchgrasses and winterfat, and annual climate conditions that affect forage production. The loss of rangeland and forage would temporarily displace livestock during construction and operations of the Proposed Action. All of the fenced acres, and the majority of the impacts, would be located within the Bull Corner/Poison Patch grazing use area of the Duckwater Allotment.

As indicated in Section 3.10, the BLM manages rangelands to achieve Northeast Great Basin Resource Advisory Council Standards and evaluations are made periodically to determine whether goals are being met. The grazing permits themselves for the Newark, and Duckwater and South Pancake allotments would not be modified immediately because of the loss of forage resulting from the Proposed Action. The affected allotment(s) would continue to be monitored for forage conditions and any appropriate adjustments to the long-term grazing permit(s) would be made at a future date as the permits come up for renewal on the expiration date. BLM would continue to coordinate with the livestock permittees on an annual basis to implement grazing practices that achieve or make progress towards achievement of the Standards. The level of coordination required between BLM and the permittees to achieve rangeland health standards would increase slightly. There may be a minor loss in the flexibility of the Duckwater allotment operations to use and distribute sheep or cattle over a new smaller land area, thus making it more difficult to achieve these standards.

Blasting may occur in rocky areas during installation of the Proposed Action power poles or maintenance road and could result in short-term noise impacts to livestock in the immediate vicinity of the blasting site.

Indirect effects to range resources could include impacts due to changes in vegetation communities, forage productivity and noxious weeds as described in Section 4.8. Economic impacts related to livestock grazing are described in section 4.18 Socioeconomic Resources, in the subsection Proposed Action, Agriculture-Related Economic Impacts and in subsections for each alternative.

Operations, Maintenance, and Reclamation

Under the Proposed Action, loss of access to forage resources and livestock movement corridors would be short-term; after reclamation and closure, access to 8,757 acres of rangeland would be restored. Surface disturbance on 3,950 acres would be long-term; however, approximately 3,490 acres of vegetation would be reclaimed concurrently and immediately following the end of mining.

Several proposed facilities would not be reclaimed, including the expanded pit, one process pond, the stormwater control facilities, sediment basins, and disturbance associated with the proposed county road re-route construction and widening if White Pine County decides to upgrade the county road re-route (Figure 2.3-15). In total, 458 acres of vegetation would not be reclaimed, resulting in long-term loss of forage. Of the 458 acres that would not be reclaimed, 334 acres disturbed during expansion of the pit would be permanently lost, as bare rock would be exposed. The remaining 124 acres that would not be reclaimed would revegetate through natural processes. This permanent loss of forage due to the pit expansion would result in a permanent loss of 11 AUMs of forage within the Bull Corner/Poison Patch pasture of the Duckwater Grazing Allotment, which would be less than 1 percent of AUMs available in the Duckwater Grazing Allotment. Successful reclamation of and potential increased forage productivity associated with the other mine facilities may partially compensate for the permanent loss of 11 AUMs of forage. After vegetation has been successfully re-established per BLM and NDEP revegetation standards, the BLM would re-evaluate livestock grazing in the Plan area.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Short-term or long-term loss or reduction in productivity of forage resources for range could occur.

4.10.4 Northern Power Line Route Alternative (Alternative 2)

Impacts during construction and operations, maintenance and reclamation under the Northern Power Line Route Alternative would be similar in type, intensity and duration to the Proposed Action, except that construction disturbance would be 33 acres less than that of the Proposed Action and would be limited to the Duckwater Allotment.

4.10.5 Southern Power Line Alternative (Alternative 3)

Impacts during construction and operations, maintenance and reclamation under the Southern Power Line Alternative would be similar in type, intensity and duration to the Proposed Action, except the construction disturbance would be 34 acres less than that of the Proposed Action and would be limited to the Duckwater Allotment.

4.10.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

Impacts during construction and operations, maintenance and reclamation under the Northwest Main Access Route Alternative, Northern Power Line Route would be similar in type, intensity and duration to those described under the Proposed Action, except that approximately 14 additional acres and approximately 36 additional acres of long-term disturbance would occur in the Newark Allotment and the Duckwater Allotment respectively. Access restriction and surface disturbance would impact an additional 1.4 AUMs in the Newark Grazing Allotment and an additional 1 AUM in the Duckwater Allotment.

Construction of this alternative main access route would result in approximately 10 acres of long-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These pits would be reclaimed after completion of road construction. Impacts to livestock, including increased frequency of individual animal mortality due to vehicle-livestock collision, could occur west of the mine area as a result of increased vehicular traffic on this alternative main access route.

4.10.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

Impacts during construction and operations, maintenance and closure under the Northwest Main Access Route Alternative, Southern Power Line Route would be similar in type, intensity and duration to those described under the Proposed Action, except that an additional 15 acres and 38 acres of long-term disturbance would occur in the Newark Allotment and the Duckwater Allotment respectively. Access restriction and surface disturbance would impact an additional 1.4 AUMs in the Newark Grazing Allotment and an additional 1.7 AUMs in the Duckwater Allotment.

Construction of this alternative main access route would result in approximately 10 acres of long-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These pits would be reclaimed after completion of road construction. Impacts to livestock, including increased frequency of individual animal mortality due to vehicle-livestock collision, could occur west of the mine area as a result of increased vehicular traffic on this alternative main access route.

4.10.8 Modified County Road Re-Route Alternative (Alternative 6)

Impacts during construction and operations, maintenance and closure under the Modified County Road Re-Route Alternative would be similar in type, intensity and duration to the Proposed Action,

except 7 fewer acres of construction disturbance would occur compared to the Proposed Action. In the future, if White Pine County decides to widen the county road re-route, an additional 28 acres of disturbance would occur. In comparison, the Proposed Action would result in 22 acres of disturbance due to road widening). Overall 1 less acre of disturbance would occur compared to the Proposed Action.

4.10.9 Western Tailings Storage Facility Alternative (Alternative 7)

Impacts during construction and operations, maintenance, and closure under the Western Tailings Storage Facility Alternative would be similar in type, intensity and duration to the Proposed Action, except the total fenced area in the Duckwater Allotment would be smaller, restricting access to 1,708 fewer acres than under the Proposed Action.

Under the Western Tailings Storage Facility Alternative, 420 acres of long-term disturbance in rangeland would not be reclaimed. This disturbance would impact 38 fewer acres than the Proposed Action. Permanent loss due to pit expansion would impact 334 acres and 11 AUMs of forage, similar to the Proposed Action.

4.10.10 No Action Alternative (Alternative 8)

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no associated project impacts on range resources excluding the previously authorized exploration activities (Section 2.2).

4.10.11 Preferred Alternative (Alternative 9)

Type, intensity and duration of impacts during construction and operation, maintenance, and closure under this alternative would be similar to those described under the Proposed Action, except that, during construction of the Northwest Main Access Route, an additional 15 acres and 38 acres of long-term disturbance would occur in the Newark Allotment and the Duckwater Allotment, respectively (Figure 3.10-1, Figure 4.10-1). Also, no project-related disturbance would occur within the South Pancake Allotment, compared to 4 acres of long-term disturbance under the Proposed Action.

Approximately 10 acres of long-term surface disturbance would occur related to obtaining gravel from two 5-acre pits located along the Northwest Main Access Route. These pits would be reclaimed after completion of road construction.

Impacts to livestock, including increased frequency of individual animal mortality due to vehicle-livestock collision, could occur west of the mine area as a result of increased vehicular traffic on the Northwest Main Access Route. No new road construction would occur along the Modified County Road Re-Route, resulting in 7 fewer acres of surface disturbance compared to the Proposed Action. In the future, if White Pine County decides to widen the Modified County Road Re-route, an additional 28 acres of disturbance would occur. In comparison, the Proposed Action would result in 29 acres of disturbance due to road construction and widening. Overall, 1 less acre of disturbance would occur compared to the Proposed Action.

The Preferred Alternative would include installation of the mine area fence proposed for all action alternatives except the Western Tailings Storage Facility Alternative, and therefore would restrict access to 8,757 acres as identified under the Proposed Action. This fence would restrict livestock movement through historic movement corridors on the north and west sides of the project area.

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BLM

ELY DISTRICT OFFICE

Newark Winter Grazing Use Area

NEWARK Grazing Allotment

South Newark

West Pasture Grazing Use Area

East Pasture Grazing Use Area

SIX MILE Grazing Allotment

Eureka County

18 Mile House Grazing Use Area

West Pasture Grazing Use Area

East Pasture Grazing Use Area

SOUTH PANCAKE Grazing Allotment

MONTE CRISTO Grazing Allotment

BASY JUNIOR ROAD / CR 1177

Access Road

Segment of BLM 4006 to be widened to 65' wide corridor

BLM 1179 / CR 1224

Northwest Main Access Route Alternative, Southern Power Line Route

White Pine County

DUCKWATER Grazing Allotment

BLM 4006

BLM ROAD

Communication Site

Process Pond

Process Pond

CR 1178

Bull Corner/Poison Patch Grazing Use Area

Lined Tailings Impoundment (WESTERN TAILINGS STORAGE FACILITY)

BLM 4059

UNIMPROVED BLM ROAD

Green Springs Valley Grazing Use Area

Cattle Guard

BLM 4009 / CR 1190

CR 1177

Modified County Road Re-Route Alternative

Nye County

Legend

- Plan Area Boundary
- Proposed Action Mine Area Fence
- Grazing Use Area
- Grazing Allotment
- County Boundary
- Process Pond Fence
- Pan Mine Southwest Power Line Route
- Southern Power Line Route Alternative (alternative power line would connect to Pan Mine Southwest
- Northwest Main Access Route Alternative, Southern Power Line Route
- Modified County Road Re-Route Alternative (would use existing BLM and County
- Existing BLM or County Road in the Project Vicinity

- Proposed Monitoring Well
- Powerline
- Conveyor Belt
- Water Pipeline
- Water Pipeline Corridor
- Haul Road
- Secondary Road
- Stormwater Control
- Heap Leach Pad
- Pit
- Growth Media Stockpile
- Sediment Basin
- Stock Pile
- Tailings Storage Facility
- Waste Rock Disposal Area

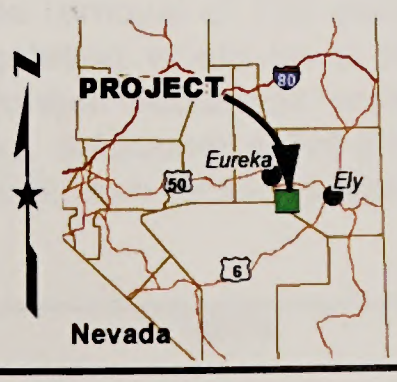
FIGURE 4.10-1
PREFERRED ALTERNATIVE FOOTPRINT IN GRAZING ALLOTMENTS

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 7/31/2017

MAIN MAP:

0 4 8 Miles



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ELY DISTRICT
EGAN FIELD OFFICE

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Basemap Source: ESRI World Shaded Relief Map Service Sage-Grouse Management Category Data Source: U.S. Geological Survey, Western Ecological Research Center, Dixon Field Station, Dixon. CA. Nevada Sagebrush Ecosystem Program, Carson City, NV (August 2014).

PATH: Z:\GIS\PROJECTS_ENVC\0001617_GOLDROCK\GIS\ARCMAP_MXD\2017_AFEISFIGURE_4_10-1_PREFERRED ALTERNATIVEFOOTPRINT_INGRAZINGALLOTMENTS.MXD | LAST SAVED BY MESTEFANUS | LAST SAVED ON 10/31/2017 2:48:

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Access restriction and surface disturbance would impact an additional 1 AUM in the Newark Grazing Allotment and an additional 2.5 AUMs in the Duckwater Allotment compared to the Proposed Action.

Construction of a more compact facility layout associated with the Western Tailings Storage Facility would result in approximately 419 acres of long-term disturbance that would not be reclaimed, which is 38 fewer acres than would occur under the Proposed Action. Construction of this facility layout would minimize long-term impacts to livestock forage resources. Pit expansion would result in permanent loss of 334 acres and 11 AUMs of forage, similar to the Proposed Action.

4.10.12 Additional Monitoring and Mitigation

Mitigation Measure R-1: No additional monitoring is required. Mitigation would be implemented under all action alternatives. The BLM would coordinate with the grazing permittees and Midway to identify opportunities for range improvement projects that could offset some short-term impacts.

4.11 FOREST PRODUCTS AND FUELS

4.11.1 Analysis Areas

The Proposed Action analysis areas are the same as those used for soils (Section 4.5.1).

4.11.2 Indicators

Indicators for forest products resources focus on acreage of forest community disturbance and how that might potentially impact permitted harvest and traditional use of forest product resources. For fuel resources, indicators focus on the potential impacts to fuel availability. The following factors were considered in determining effects on forest product and fuel resources:

- Magnitude of disturbance or loss;
- Percentage of potential permitted harvest areas that would be affected;
- Susceptibility of the resource to disturbance or the alterations to traditional use; and
- Potential impact to available fuels.

4.11.3 Proposed Action (Alternative 1)

Construction

Forest Products

The Great Basin Pinyon-Juniper vegetation community covers 5,746 acres of the analysis area. Few pinyon-pine remain in the pinyon-juniper woodlands due selective harvesting by the Carbonari in the late 1800s (Giambastiani 2013). Additional information about impacts to the various vegetation types is described in Section 4.8.

Proposed fencing around the 8,757-acre mine area would restrict access, resulting in loss of access to forest products within that area. This loss of access would be short-term. Direct impacts to forest products would include the removal of 746 acres of pinyon-juniper woodland during construction. Removal of this vegetation would be a long-term impact. Of the 746 acres, approximately 115 acres of pinyon-juniper woodlands, or less than one percent of the vegetation community, would not be reclaimed. Additional direct impacts to forest products could occur during exploration on 400 acres in unknown locations within the Plan area. Table 4.11-1 shows

the estimated short-term and long-term impacts within the pinyon-juniper woodland community type for the Proposed Action and alternatives. Pinyon-juniper woodlands are common and widespread throughout the analysis area and areas adjacent to the project. Direct effects on forest products would be long term.

Table 4.11-1 Disturbance to Great Basin Pinyon-Juniper Woodlands Under the Proposed Actio and Alternatives[1]

Great Basin Pinyon-juniper Woodland	Area Impacted (acres)							
	Proposed Action	Northern Power Line Route Alternative	Southern Power Line Route Alternative	Northwest Main Access Route Alternative (North)	Northwest Main Access Route Alternative (South)	Modified County Road	Western Tailings Storage Facility Alternative	Preferred Alternativ
Short-term Impact: Loss of Access and Vegetation Removal During Mine Construction and Operation	2,650	2,633	2,630	2,651	2,643	2,650	1,471	2,644
Long-term Impact: Vegetation Removal During Construction In Known Locations	746	729	726	747	739	746	599	596
Long-term Impact: Vegetation Removal During Construction, Not Reclaimed[2]	115	115	115	115	115	115	109	109

Notes:

1 In addition to this disturbance in known locations, exploration activities throughout the Plan area would result in up to approximately 40(acres of long-term disturbance, which would be reclaimed.

2 "Long-term impact: Vegetation Removal During Construction, Not Reclaimed" would include the pit, one process pond, stormwater contro facilities, sediment basins, and disturbance associated with the proposed county road re-route construction and widening if White Pine County decides to upgrade the road. The area presented in this row is a subset of the area presented in the row " Long-term Impact: Vegetation Removal During Construction In Known Locations".

The Proposed Action would likely result in the transition to grass and forb dominated vegetation types in areas following reclamation. It is likely that over the long term, shrubs and trees may naturally recolonize disturbed areas. It may take 75 to 100 years for singleleaf pinyon and Utah juniper trees to mature (Barney and Frischknecht 1974). The Proposed Action is located in an area where traditional use of singleleaf pinyon and Utah juniper is not a common occurrence (Mabey 2013), and the long-term change in vegetation and loss of woodland productivity would not result in significant impacts to forest products.

In addition to the direct removal of vegetation, forest products and harvest would be indirectly impacted by the establishment of a perimeter fence around the 8,757-acre active mine area. 2,650 acres of pinyon-juniper woodland would be unavailable for forest product collection or use during the life of the mine. The only commercial fuelwood harvest permit that falls within the analysis area is located northeast of the Plan along the northern portion of Green Springs Road area. Approximately 4.2 acres (or 28 percent) of the 14.9-acre permit fall within the analysis area. No disturbance is proposed in this area. However, use of the existing main access route may create dust that may impacted vegetation. Dust contributes to "edge effects"; near roads and construction sites dust can coat surrounding vegetation and disrupt photosynthesis, respiration, and transpiration of plants, ultimately leading to decreased vegetation productivity (Coffin 2007; Trombulak and Frissell 2000). In turn, this could decrease vegetation quality and

viability beyond the actual footprint of direct disturbance. Any impacts to this permitted area would be short term.

A 1,220-acre commercial pine nut collection area is located within the analysis area, northeast of the Plan area near the junction of US 50 and Green Springs Road. This commercial pine nut area is active and was last used in 2011 (BLM 2014e). Under the Proposed Action, no disturbance would occur within this area. Similar to the impacts to commercial firewood, all of these impacts would be associated with road dust and any impacts to pine nut harvest would likely be short term.

Other indirect impacts to forest products might include degradation of habitat due to soil compaction, increased accesses and the increased potential for noxious and non-native, invasive weed establishment as described in Section 4.8. These impacts would likely be long term.

Fuels

Calculations of fuel availability and loading were made based on determined means provided in "Guide for Quantifying Fuels in the Sagebrush Steppe and Juniper Woodlands of the Great Basin, Technical Note 430" (Stebleton and Bunting 2009). The calculated loadings are shown in Table 4.11-2 and Table 4.11-3. The fuel loading calculations provide information about the potential fuel availability in the case of fire in the analysis area, and could provide a basis for evaluating the potential impacts from the Proposed Action to fuels. Based on these calculations, the Proposed Action would remove approximately 940 tons of available fuel wood. This is a reduction of approximately five percent of available fuels within the analysis area.

Table 4.11-2 Proposed Action Fuel Availability and Loading

Type of Loading	Fuel Available Within Proposed Action Project Area (tons)
Approximate Live Loading[1]	37,487
Approximate Dead Loading[2]	2,434
Available Loading[3]	15,968

Notes:
1 Fuels available as live foliage
2 Fuels available as dead wood
3 Available loading assumes 100% of foliage and 50% of the 1-hour fuels are available to burn at any given time.

Sources: Scott and Reinhart 2001

Table 4.11-3 Disturbances to Fuel Availability and Loading Under the Proposed Action and Alternatives

Alternative	Live Loading[1] (tons)	Dead Loading[2] (tons)	Available Loading[3] (tons)
Proposed Action	2,171	136	940
Northern Power Line Route Alternative	2,060	129	892
Southern Power Line Route Alternative	2,037	127	883
NW Main Access Route Alternative - North	2,179	137	943
NW Main Access Route Alternative - South	2,129	133	922
Modified County Road Re-Route Alternative	2,171	136	940
Western Tailings Storage Facility Alternative	1,632	102	706
Preferred Alternative	1,622	101	702

Notes:
1 Fuels available as live foliage
2 Fuels available as dead wood
3 Available loading assumes 100% of foliage and 50% of the 1-hour fuels are available to burn at any given time (Scott and Reinhart 2001)

Throughout the Intermountain West, there has been a documented increase in the density and distribution of pinyon-juniper forests over the past 130 years. This change has been attributed to the reduction in fire frequency (Miller et al. 2000). Studies are now indicating that fire may play an important role in maintaining plant communities within the Great Basin Region (Miller et al. 2001). Although the impacts to pinyon-juniper woodlands from the Proposed Action may not fall within a recognized fire management program, the reduction of fuels may have a beneficial effect on vegetation communities. Any impacts to fuels from the Proposed Action would likely be long term.

Operations, Maintenance, and Reclamation

Forest Products

Operation and maintenance activities for the Proposed Action would cause short-term impacts to forest products as a result of active mining operations and continued access for repairs and maintenance. If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Short-term or long-term loss or reduction in productivity of forest products (pinyon-juniper woodland communities) could occur.

Once mining is completed, reclamation activities would include the seeding of disturbed areas with appropriate BLM-approved seed mixes (Table 2.3-7). The seed mix would include both native and non-native species that have been successfully used in reclaiming disturbed areas in the past. Vegetation would consist mostly of grasses in the short term. Native shrubs, as well as pinyon pine and juniper, would increase with time but it may take 15 to 30 years for sagebrush to mature (BLM 2004c), and it may take 75 to 100 years for singleleaf pinyon and Utah juniper trees to mature (Barney and Frischknecht 1974). After the project is complete, the fences would be removed and the public would have access to the reclaimed mine area. Approximately 115 acres of pinyon-juniper woodland communities would not be reclaimed, resulting in long-term impacts to Forest Products (Table 4.11-1).

The pinyon-juniper woodlands are common and widespread throughout the area. The reclamation plan (Section 2.3.16) 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 which eventually would include pinyon-juniper woodland.

Fuels

Impacts to fuels during operations, maintenance, and reclamation would be long term. Fuel loading would be reduced during the operations and long-term impacts to fuel resources would consist of the removal of approximately 115 acres of pinyon-juniper woodland.

4.11.4 Northern Power Line Route Alternative (Alternative 2)

The Northern Power Line Route Alternative would result in similar types, intensity and duration of impacts on forest products as described under the Proposed Action, except that this alternative would result in approximately 17 fewer acres of long-term impacts to pinyon-juniper woodlands compared to the Proposed Action (Table 4.11-1).

The impacts to fuels under this Alternative would be 47 fewer tons than the Proposed Action (Table 4.11-3).

4.11.5 Southern Power Line Alternative (Alternative 3)

The Southern Power Line Route Alternative would result in similar types, intensity, and duration of impacts on forest products as described under the Proposed Action, except that this alternative would result in approximately 20 fewer acres of long-term disturbance to pinyon-juniper woodland compared to the Proposed Action (Table 4.11-1).

The impacts to fuels under this Alternative would be 57 fewer tons than the Proposed Action (Table 4.11-3).

4.11.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

The Northwest Main Access Route Alternative, Northern Power Line would result in similar types, intensity and duration of impacts on forest products as described under the Proposed Action, except that under this alternative surface disturbance would result in approximately 1 additional acre of long-term impacts to pinyon-juniper woodlands compared to the Proposed Action (Table 4.11-1).

Under this alternative, approximately 4 more tons of fuel resources would be impacted by surface disturbance as compared to the Proposed Action (Table 4.11-3).

4.11.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

The Northwest Main Access Route Alternative, Southern Power Line Route would result in similar types, intensity and duration of impacts on forest products as described under the Proposed Action, except that under this alternative, surface disturbance would result in approximately 7 fewer acres of long-term impacts to pinyon-juniper woodlands compared to the Proposed Action (Table 4.11-1).

Under this alternative, approximately 18 fewer tons of fuel resources would be impacted than the Proposed Action, as shown in Table 4.11-3.

4.11.8 Modified County Road Re-Route Alternative (Alternative 6)

The Modified County Road Re-Route Alternative would result in similar types, intensity, and duration of impacts on forest products as described under the Proposed Action.

The impacts to fuels under this alternative would be similar in type, intensity and duration as those described under the Proposed Action.

4.11.9 Western Tailings Storage Facility Alternative (Alternative 7)

The Western Tailings Storage Facility Alternative would result in similar types, intensity and duration of impacts on forest products as described under the Proposed Action, except that installing the alternative fence line would result in approximately 1,179 fewer acres of short-term impacts due to access restriction, and constructing a more compact facility layout would result in approximately 147 fewer acres of long-term surface disturbance impacts to pinyon-juniper woodlands compared to the Proposed Action (Table 4.11-1).

The impacts to fuels under this alternative would be similar in type, intensity and duration to the Proposed Action but would be 233 fewer tons as shown in Table 4.11-3.

4.11.10 No Action Alternative (Alternative 8)

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no associated project impacts on forest products and fuel resources excluding the previously authorized exploration activities. Impacts of the previously authorized exploration activities were described in the EA for those activities (BLM 2012j).

4.11.11 Preferred Alternative (Alternative 9)

Under this alternative, the types, intensity, and duration of impacts on forest products would be similar to those described under the Proposed Action, except that, under this alternative, surface disturbance would result in approximately 150 fewer acres of long-term surface disturbance impacts to pinyon-juniper woodlands compared to the Proposed Action (Table 4.11-1). The Preferred Alternative would include installation of the mine area fence proposed for all action alternatives except the Western Tailings Storage Facility Alternative. With the more compact facility footprint and fewer acres of long-term disturbance, this alternative would restrict access to or impact forest products on approximately 6 fewer acres compared to the Proposed Action (Table 4.11-3).

Up to 238 fewer tons of fuel resources would be impacted in the long term under this alternative.

4.11.12 Additional Monitoring and Mitigation

No additional monitoring measures required for forest products or fuels. No mitigation measures are required for forest products or fuels.

4.12 WILD HORSES

This section describes the effects of the Proposed Action and alternatives on wild horses. Figure 3.12-1 shows the Pancake HMA and Monte Cristo WHT in the analysis area, which is defined in Section 4.12.1. For any of the alternatives, the proposed facilities would be constructed entirely within the Pancake HMA. A short segment of the existing main access route crosses the northwestern corner of the Monte Cristo WHT. Impacts to related resources water, vegetation, and air are presented in other sections of this EIS.

4.12.1 Analysis Areas

The analysis area for all action alternatives is:

- the Plan area and second water supply well and infrastructure (including a 150-foot by 150-foot pad, a 0.5-mile-long, 12-foot-wide two-track road, and a 0.5-mile-long power line with a 100-foot pole spacing and a 50-foot-radius circle of disturbance for each pole to allow for monopoles or two pole structures); for impact analysis purposes, specialists assumed that the proposed second well would be installed 0.5-mile south of the existing Easy Junior water supply well;
- A 200-foot-wide corridor along the Proposed Action power line corridor to account for varying field conditions and allow flexibility during final siting of the line (Figure 1.1-2);

- Corridors along segments of the existing and new road on the proposed county road re-route to account for disturbance if, in the future, White Pine County decides to widen the road; 30-foot-wide corridors to meet BLM "resource road" standards were used for analysis purposes (Figure 1.1-2);In the future, if White Pine County decides to widen the road, the segments of existing and new road on the proposed county road re-route;
- the main access route (Figure 1.1-2); and
- Other existing roads that lead to the Plan area (Figure 1.1-2; Routes B, D, and E, Figure 4.8-1).

The analysis area for the No Action Alternative is the approved, amended 2011 Exploration Plan area.

4.12.2 Indicators

Indicators used to assess potential impacts to wild horses include the following:

- Number of vehicle / wild horses collisions.
- Acres of habitat available within HMA to be affected by the proposed project.
- Groundwater elevations, location, number, origin of water sources available and use by wild horses, risk of releases.

4.12.3 Proposed Action (Alternative 1)

Construction

Potential impacts to wild horses within the Pancake HMA from the Proposed Action could include reduction in forage, displacement, and potential for collisions with vehicles. The proposed project-related ground disturbances would be limited to the Pancake HMA (Figure 3.12-1). A portion of Green Springs Road along the existing main access route is located in the northwest corner of the Monte Cristo WHT, but no surface disturbance is proposed along this route.

Proposed fencing around the 8,757-acre mine area would restrict access, resulting in loss of access to forage resources and displacing wild horses from this area. This loss of access would be short-term.

Proposed surface disturbance on approximately 3,550 acres in defined locations in the Plan area would result in removal of vegetation and long-term loss of forage resource. In addition, exploration disturbance on approximately 400 acres would occur in unknown locations within the Plan area during the construction and operation of the mine. In total, approximately 3,950 acres would be disturbed and would represent a long-term impact. Of that 3,950 acres, approximately 3,490 acres would be reclaimed concurrently and immediately following the end of mining.

Approximately 140 acres outside the fenced mine area would be disturbed during water pipeline maintenance or replacement, entrance facility construction or maintenance, road construction or widening, and power line and well construction or maintenance. Considering this loss of forage resource on 140 acres outside the fenced mine area, along with loss of forage resource on 400 acres of exploration within the Plan area and loss of access to 8,757 acres of forage resource within the fenced mine area, approximately 9,300 acres of wild horse forage resources, or approximately 1 percent of the Pancake HMA, could be impacted. Impacts from mine blasting in the mine area or along the Proposed Action power line route, equipment operation, and increased

human presence in the Plan area could also temporarily displace wild horses. The location of project components such as the existing main access route and proposed fencing of the mine area could intersect with daily movement routes between foraging areas. Impact to water resources is described in Section 4.2.

Approximately 458 acres of surface disturbance would not be reclaimed, including the 334-acre pit expansion, resulting in long-term impacts to wild horse forage resources. Excavation of the pit would result in a permanent loss of 334 acres of wild horse habitat. This long-term disturbance would make up less than 1 percent of the 855,000-acre Pancake HMA. Wild horses associated with the Pancake HMA would likely use forage throughout the remainder of the HMA.

Operations, Maintenance, and Reclamation

Mining operations would displace wild horses into adjacent areas. It is anticipated that managing wild horses within the AML would minimize the potential for direct conflicts between mine activities and wild horses within the analysis area. The Applicant-Committed EPMs outlined in Table 2.3-8 would be implemented to help minimize mortality to wild horses due to potential vehicular collisions.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Short-term or long-term loss or reduction in productivity of forage resources for wild horses could occur.

4.12.4 Northern Power Line Route Alternative (Alternative 2)

The Northern Power Line Route Alternative would result in similar types, intensity and duration of impacts to wild horses as described under the Proposed Action, except that under this alternative approximately 33 fewer acres of long-term impacts would occur during construction of the power line and associated maintenance road.

4.12.5 Southern Power Line Route Alternative (Alternative 3)

The Southern Power Line Route Alternative would result in similar types, intensity and duration of impacts to wild horses as described under the Proposed Action, except that approximately 34 fewer acres of long-term impacts would occur during construction of the power line and associated maintenance road.

4.12.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

The Northwest Main Access Route Alternative would result in similar types, intensity and duration of impacts to wild horses as those described under the Proposed Action.

Construction of a power transmission line and maintenance road along the Northern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities.

For this alternative, 64 more acres of long-term surface disturbance would occur compared to the Proposed Action. This disturbance would be reclaimed. Impacts from long-term surface disturbance that would not be reclaimed would be similar to those described under the Proposed Action.

4.12.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

The Northwest Main Access Route Alternative, Southern Power Line Route would result in similar types, intensity and duration of impacts to wild horses as those described under the Proposed Action.

Construction of a power transmission line and maintenance road along the Southern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities.

For this alternative, 72 more acres of long-term surface disturbance would occur compared to the Proposed Action. This disturbance would be reclaimed. Impacts from long-term surface disturbance that would not be reclaimed would be similar to those described under the Proposed Action.

4.12.8 Modified County Road Re-Route Alternative (Alternative 6)

The Northwest Main Access Route Alternative, Southern Power Line Route would result in similar types, intensity and duration of impacts to wild horses as those described under the Proposed Action. Relative to the Proposed Action, the county road re-route under this alternative would be approximately 1 mile longer and use different road segments (Figure 2.4-2). Overall, this alternative could result in 1 less acre of long-term disturbance compared to the Proposed Action.

4.12.9 Western Tailings Storage Facility Alternative (Alternative 7)

The Northwest Main Access Route Alternative, Southern Power Line Route would result in similar types, intensity and duration of impacts to wild horses as those described under the Proposed Action. Under this alternative, the fenced mine area would be smaller, and approximately 1,708 fewer acres of wild horse habitat would be restricted from access. Construction of a more compact facility layout associated with the Western Tailings Storage Facility would result in approximately 38 fewer acres of long-term disturbance of forage resources that would not be reclaimed compared to the Proposed Action, minimizing long-term impacts to wild horses and their habitat.

4.12.10 No Action Alternative (Alternative 8)

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no project-related impacts to wild horse habitat. OHV usage trends within the Pancake HMA and the Monte Cristo WHT would continue under the No Action Alternative. Wild horse habitat disturbances would continue similar to current conditions, including previously authorized exploration activities as described in Section 2.2. Wild horses currently in the analysis area would continue to use these areas.

4.12.11 Preferred Alternative (Alternative 9)

This alternative would result in types, intensity, and duration of impacts to wild horses similar to those described under the Proposed Action. However, construction of a power transmission line and maintenance road along the Southern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities.

The Modified County Road Re-route would be approximately 1 mile longer and use different road segments compared to the Proposed Action (Figure 2.4-2). Overall, the Modified County Road Re-Route could result in 1 less acre of long-term disturbance compared to the Proposed Action.

The fenced mine area would be the same as that area identified for the Proposed Action and would restrict access to approximately 8,757 acres.

Construction of a more compact facility layout associated with the Western Tailings Storage Facility would result in approximately 38 fewer acres of long-term disturbance of forage resources that would not be reclaimed compared to the Proposed Action, minimizing long-term impacts to wild horses and their habitat.

4.12.12 Additional Monitoring and Mitigation

No additional monitoring measures are required. No mitigation measures are required.

4.13 CULTURAL RESOURCES

Under the current statutes and regulations including but not limited to the National Historic Preservation Act (NHPA) of 1966 (16 U.S.C. 470-470t), the National Environmental Policy Act (NEPA) of 1969 (40 U.S.C. 1500-17.7; 42 U.S.C. 4321-61) and their implementing regulations (36 CFR 61; 36 CFR 65; 36 CFR 800; 36 CFR 801; 36 CFR 805; 43 CFR 1500-1508), federal agencies must consider the effects of federal actions on cultural and traditional resources. Federal actions include activities on federal land, federally funded activities, and activities permitted or sanctioned by federal agencies. Many states also have their own legislation to protect cultural and traditional sites. Cultural resource inventories, including background research and field surveys are required to identify these resources or to update documentation before federal actions are approved.

Section 106 of the NHPA requires that federal agencies take into account the effects of federal undertakings to historic properties. ARPA forbids damage to or removal of cultural resources or objects of patrimony located on federal lands without a valid permit and specifies penalties for such actions. A finding of adverse effect to historic properties under Section 106 would be considered a significant impact under NEPA. Cultural resources are non-renewable resources, and any adverse impact would be permanent.

4.13.1 Analysis Areas

Area of Potential Effect

In assessing direct effects, the APE includes the Gold Rock Project APE, which is defined in the Programmatic Agreement (BLM 2014a) (Appendix 1B) as the lands proposed for surface disturbance for mining operations and the construction of a transmission line associated with the Proposed Action and alternatives and as described in Section 2.3 and shown on Figure 2.3-1. The Exploration APE for the Gold Rock Project encompasses a larger geographic area where Midway may conduct mineral exploration to identify additional ore bodies and is illustrated by the Plan area boundary on Figure 1.1-2.

Proposed Action

The Gold Rock Project APE includes:

- The Plan area;
- a 150-foot by 150-foot pad for the second water supply well plus a 100-foot area of potential effect; a 0.5-mile-long, 12-foot-wide two-track road to the second water supply well plus a 100-foot area of potential effect on each side of the center line; and a 0.5-mile-long power line to the second water supply well plus a 100-foot area of potential effect on each side of the center line; for impact analysis purposes, specialists assumed that the proposed second well would be installed 0.5-mile south of the existing Easy Junior water supply well;
- The Proposed Action power line route plus a 100-foot area of potential effect on each side of the center line; and
- Segments of the existing and new road on the proposed county road re-route plus a 100-foot area of potential effect on each side of the center line to account for disturbance if, in the future, White Pine County decides to widen the road.

Northern Power Line Route Alternative

The APE is similar to the Proposed Action APE, with one modification:

- Inclusion of the Northern Power Line Route Alternative plus a 100-foot area of potential effect on each side of the center line, instead of the Proposed Action power line route and area of potential effect.

Southern Power Line Route Alternative

The APE is similar to the Proposed Action APE with one modification:

- Inclusion of the Southern Power Line Route Alternative plus a 100-foot area of potential effect on each side of the center line, instead of the Proposed Action power line route and area of potential effect.

Northwest Main Access Route Alternative, Northern Power Line Route

The APE is similar to the Proposed Action APE, with two modifications:

- Inclusion of the Northern Power Line Route Alternative instead of the Proposed Action power line route and area of potential effect.

- Addition of the Northwestern Main Access Route Alternative, Northern Power Line Route, plus a 100-foot area of potential effect on each side of the center line (Figure 2.4-2).

Northwest Main Access Route Alternative, Southern Power Line Route

The APE is similar to the Proposed Action APE, with two modifications:

- Inclusion of the Southern Power Line Route alternative instead of the Proposed Action power line route and area of potential effect.
- Addition of the Northwestern Main Access Route Alternative, Southern Power Line Route, plus a 100-foot area of potential effect on each side of the center line (Figure 2.4-2).

Modified County Road Re-Route Alternative

The APE is similar to the Proposed Action APE, with one modification:

- Inclusion of an existing segment of BLM 4059 from BLM 4006/CR 1180 to the proposed county road re-route plus a 100-foot area of potential effect on each side of the center line, instead of the new road segment and unmarked BLM road segment and area of potential effect (Figure 2.4-2).

Western Tailings Storage Facility Alternative

The APE is the same as the Proposed Action APE.

No Action Alternative

The APE is the approved, amended 2011 Exploration Plan area.

Analysis Area

The analysis area for establishing historic contexts and the nature of known resources in and around the project area includes the direct disturbance area plus one mile outward in all directions from the perimeter of both the Project and Exploration APEs. The APE for indirect effects may extend beyond the APE for direct effects to encompass properties that have traditional religious and cultural importance to Indian tribes or other historic properties such as trails or roads that are important in part for their historic setting. These resources may be sensitive to visual or auditory impacts that affect the historic setting or traditional or religious values. Visual or auditory intrusion may affect historic properties or traditional and religious values that are farther from the project.

Proposed Action

- The analysis area includes the Plan area, proposed second well, Proposed Action power line, and proposed county road re-route plus a one-mile area of potential effect (Figure 1.1-2).

Northern Power Line Route Alternative

- The analysis area is similar to the Proposed Action, with one modification:
- Inclusion of the Northern Power Line Route plus a one-mile area of potential effect, instead of the Proposed Action power line plus a one-mile area of potential effect (Figure 2.4-1).

Southern Power Line Route Alternative

- The analysis area is similar to the Proposed Action, with one modification:
- Inclusion of the Southern Power Line Route plus a one-mile area of potential effect, instead of the Proposed Action power line plus a one-mile area of potential effect (Figure 2.4-1).

Northwest Main Access Route Alternative, Northern Power Line Route

- The analysis area is similar to the Proposed Action, with one modification:

Inclusion of the Northwest Main Access Route Alternative, Northern Power Line Route plus a one-mile area of potential effect (Figure 2.4-2).

Northwest Main Access Route Alternative, Southern Power Line Route

- The analysis area is similar to the Proposed Action, with one modification:

Inclusion of the Northwest Main Access Route Alternative, Southern Power Line Route plus a one-mile area of potential effect (Figure 2.4-2).

Modified County Road Re-Route Alternative

- The analysis area is similar to the Proposed Action, with one modification:
- Inclusion of the Modified County Road Re-Route plus a one-mile area of potential effect, instead of the proposed county road re-route plus a one-mile area of potential effect (Figure 2.4-2).

Western Tailings Storage Facility Alternative

- The analysis area is the same as for the Proposed Action.

4.13.2 Indicators

- Presence of identified historic properties (cultural resources listed on or eligible for the National Register of Historic Places) in the Plan area that could be disturbed.
- Potential presence of unanticipated discoveries (undocumented cultural resources or human remains).

4.13.3 Proposed Action (Alternative 1)

Thirty-nine historic properties have been identified within the APE of direct effect of proposed construction or project features. Twenty-two of the 39 historic properties that could potentially be affected are prehistoric cultural resources. Seventeen of the 39 historic properties that could potentially be affected are historic cultural resources. As defined in Section 3.13, cultural resources that are listed on or eligible for the NRHP are historic properties. Cultural resources that are unevaluated are potentially eligible for the NRHP and are also considered historic properties. These historic properties could be degraded or destroyed by proposed construction, exploration or operation of the project. Under the terms of the PA between BLM and SHPO (2014), any amendments or modifications to the Proposed Action and any future exploration would be surveyed by qualified archaeologists following BLM Class III Standards.

During operation, indirect impacts could also occur to historic properties that have been avoided. These indirect impacts could include vandalism made possible by increased traffic in the vicinity of the historic property or inadvertent damage to unidentified portions of the sites. Avoidance and protection measures for historic properties developed before construction would be maintained and monitored to protect these resources.

Some historic properties may also be considered eligible as Traditional Cultural Properties (TCPs). If the historic property is also a TCP, Native American religious and traditional values must also be considered (Section 4.14). In addition, an unanticipated discovery plan consistent with Stipulation X of the PA would be developed outlining the procedures in the event that an undocumented cultural resource or human remains are encountered during construction.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Loss, disturbance or damage to NRHP-eligible cultural resources could occur.

Section 4.13.12 describes mitigation regarding cultural resources, including mitigation measures, effectiveness, and effects on other resources.

4.13.4 Northern Power Line Route Alternative (Alternative 2)

A cultural survey was performed within the corridor, and several sites were found. These sites would be avoided.

4.13.5 Southern Power Line Route Alternative (Alternative 3)

A cultural survey was performed within the corridor, and several sites were found. These sites would be avoided.

4.13.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

A cultural survey was performed within the corridor, and several sites were found. These sites would be avoided.

4.13.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

A cultural survey was performed within the corridor, and several sites were found. These sites would be avoided.

4.13.8 Modified County Road Re-Route Alternative (Alternative 6)

If this alternative is selected, existing roads would be used and Midway does not propose any disturbance along this route. In the future, if White Pine County would decide to widen this re-route, then additional disturbance could occur. At this time, no additional historic properties have been identified within the areas of proposed disturbance for the Modified County Road Re-Route Alternative in comparison to the Proposed Action, and no cultural inventory has been completed for the entire Modified County Road Re-Route Alternative. If White Pine County decides to widen the road, the area would be surveyed by qualified archaeologists following BLM Class III Standards in accordance with the Programmatic Agreement (Appendix 1B). The results of the additional inventory would undergo standard Section 106 review.

4.13.9 Western Tailings Storage Facility Alternative (Alternative 7)

The Western Tailings Storage Facility Alternative would involve siting a tailings storage facility in the western part of the Plan area in comparison to the Proposed Action TSF location. The proposed footprint of disturbance for this TSF may affect one additional historic property not affected by the Proposed Action. This site is a small, unevaluated prehistoric lithic scatter.

4.13.10 No Action Alternative (Alternative 8)

There would be no new federal undertaking under this alternative.

4.13.11 Preferred Alternative (Alternative 9)

Under this alternative, construction of the Northwest Main Access Route and Southern Power Line would involve avoidance of several sites found during a cultural resource survey of the corridor.

The Modified County Road Re-Route would involve use of existing roads, and Midway does not propose any disturbance along this route. In the future, if White Pine County would decide to widen this Modified County Road Re-Route, then additional disturbance could occur. At this time, no additional historic properties have been identified within the areas of proposed disturbance for the Modified County Road Re-Route Alternative in comparison to the Proposed Action, and no cultural inventory has been completed for the entire Modified County Road Re-Route. If White Pine County decides to widen the road, the area would be surveyed by qualified archaeologists following BLM Class III Standards in accordance with the Programmatic Agreement (Appendix 1B). The results of the additional inventory would undergo standard Section 106 review.

Construction of the Western TSF would be sited in the western part of the Plan area rather than in the southeastern part of the Plan area, as presented under the Proposed Action TSF. The proposed footprint of disturbance for the Western TSF may affect one additional historic property not affected by the Proposed Action. This site is a small, unevaluated prehistoric lithic scatter.

In summary, this alternative would require avoidance of several sites within the Northwest Main Access Route corridor, future survey of the Modified County Road Re-Route if White Pine County decides to widen the route, and compliance with the Programmatic Agreement.

4.13.12 Additional Monitoring and Mitigation

Mitigation Measure C-1: No additional monitoring measures are required. Mitigation measures are designed to avoid or lessen destruction or degradation of historic properties or aspects of the historic setting that contribute to the eligibility of historic properties. The preferred mitigation is avoidance of adverse effect and protection of the historic properties from subsequent impacts including inadvertent damage.

If a historic property cannot be avoided, an alternative mitigation plan would be developed and implemented. For historic properties that are eligible for their potential to yield important information (Criterion D), data recovery is the typical mitigation measure.

The majority of prehistoric sites are eligible under Criterion D. Data recovery for prehistoric sites may include detailed documentation, collection and curation of surface artifacts, or recovery of buried artifacts and features through systematic excavation. Some of the prehistoric sites may

also be considered eligible as TCPs. Aspects of the natural and historic setting may also contribute to the eligibility of TCPs.

Mitigation would be performed in accordance with the Programmatic Agreement (Appendix 1B), which outlines the methods of identification and treatment of cultural resources. If unanticipated TCPs are identified, protective and mitigation measures may need to be developed for TCPs in consultation with concerned Native American groups, the BLM and SHPO.

4.14 NATIVE AMERICAN RELIGIOUS AND TRADITIONAL VALUES

Issues of general religious and traditional value that have been identified by Native American Tribes in consultation with BLM include Greater Sage-Grouse, Greater Sage-Grouse leks, pinyon nut gathering areas, and traditional antelope traps. In addition to direct damage to these religious or traditional values, adverse effects may also include impairment of access to these religious and traditional values. Potential impacts to Greater Sage-Grouse are addressed in Section 4.9. Potential impacts to pinyon are addressed in Section 4.11. The BLM will consult with concerned tribes regarding the findings of this analysis, will consider tribal concerns, and will strive to work cooperatively with the tribes. Antelope traps have been identified during cultural resources surveys and may also be considered TCPs.

4.14.1 Analysis Areas

The analysis areas are the same areas used for cultural resources (Section 4.13).

4.14.2 Indicators

- Presence of Greater Sage-Grouse populations and Greater Sage-Grouse lek sites that could be disturbed.
- Presence of pinyon, including traditional gathering areas, and the potential disruption of traditional pinyon gathering.
- Presence of traditional antelope traps that could be disturbed.

4.14.3 Proposed Action (Alternative 1)

No TCPs or sacred sites have been identified for the project during consultation. The Duckwater Shoshone Tribe has noted that potential impacts to Greater Sage-Grouse and its habitat, pinyon, and antelope traps are a concern. The distribution and potential effects to Greater Sage-Grouse are described in Sections 3.9 and 4.9. The distribution and potential effects to pinyon are addressed in Sections 3.11 and 4.11. The BLM will consult with the tribes regarding these effects and strive to resolve conflicts and identify mitigation measures to reduce or eliminate any adverse effects.

The Programmatic Agreement (Appendix 1B) notes methods of identifying historic properties and sites of traditional religious and cultural importance. Antelope traps are sites of traditional and cultural importance and have been identified as historic properties. Two traditional antelope traps that are recommended eligible as prehistoric resources were identified within the APE of the Proposed Action. These historic properties may be altered or destroyed. These historic properties could also be TCPs, but have not been identified as such by the Tribes. The Programmatic Agreement identifies stipulations to ensure that historic properties would be avoided or treated to mitigate effects to the extent practicable. Monitoring project activities near a site is considered a treatment. Monitoring helps to assure avoidance and protection of the site, as well as to identify,

avoid and protect undocumented objects or features outside the recorded extent of the site. In compliance with the Programmatic Agreement, monitoring would be performed during project-related construction activities in the Plan area. As noted in Section I-C of the Programmatic Agreement, "Midway would bear the expense of identification, evaluation and treatment of all historic properties. This would include paying and covering the expenses of monitors." Typically, an archaeological monitor would also be present with the tribal monitor.

Because effects to traditional antelope traps have been identified as an issue by the tribes, the BLM will consult with the tribes concerning evaluation and treatment of these historic properties. If additional Native American religious and traditional values or specific Native American concerns are identified in the course of ongoing consultation, the BLM will consult with the appropriate Tribes and individuals to obtain information and discuss appropriate mitigation measures.

4.14.4 Northern Power Line Route Alternative (Alternative 2)

This alternative differs from the Proposed Action only in the location of the corridor for the external power line route. No potential adverse effects to Native American religious and traditional values have been identified for the Proposed Action or for this alternative.

4.14.5 Southern Power Line Route Alternative (Alternative 3)

This alternative differs from the Proposed Action only in the location of the corridor for the external power line route. No potential adverse effects to Native American religious and traditional values have been identified for the Proposed Action or for this alternative.

4.14.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

This alternative differs from the Proposed Action only in the construction of new road segments and widening of existing road segments to establish an alternative main access route corridor (Figure 2.4-2), rather than using the existing main access route. No potential adverse effects to Native American religious and traditional values have been identified for the Proposed Action or for this alternative.

4.14.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

This alternative differs from the Proposed Action only in the construction of new road segments and widening of existing road segments to establish an alternative main access route corridor (Figure 2.4-2), rather than using the existing main access route. No potential adverse effects to Native American religious and traditional values have been identified for the Proposed Action or for this alternative.

4.14.8 Modified County Road Re-Route Alternative (Alternative 6)

This alternative differs from the Proposed Action in the use of only existing road segments rather than using a combination of existing and new road segments for the proposed county road re-route (Figure 2.4-2). No potential adverse effects to Native American religious and traditional values have been identified for the Proposed Action or for this alternative.

4.14.9 Western Tailings Storage Facility Alternative (Alternative 7)

The Western Tailings Storage Facility Alternative would involve siting a tailings storage facility in the western part of the Plan area in comparison to the Proposed Action TSF location. No potential adverse effects to Native American religious and traditional values have been identified for the Proposed Action or for this alternative.

4.14.10 No Action Alternative (Alternative 8)

Under the No Action Alternative, the mine, associated facilities and associated infrastructure would not be constructed and operated. There would be no adverse impacts to Native American religious and traditional values resulting from this undertaking.

4.14.11 Preferred Alternative (Alternative 9)

This alternative differs from the Proposed Action in several ways. The Northwest Main Access Route would involve construction of new road segments and widening of existing road segments. No potential adverse effects to Native American religious and traditional values have been identified related to this alternative main access route. Use of the Modified County Road Re-Route would involve only existing road segments rather than using a combination of existing and new road segments for the proposed county road re-route. No potential adverse effects to Native American religious and traditional values have been identified related to the Modified County Road Re-Route. Construction of the Western Tailings Storage Facility would involve siting a tailings storage facility in the western part of the Plan area in comparison to the Proposed Action Tailings Storage Facility location. No potential adverse effects to Native American religious and traditional values have been identified related to this alternative tailings storage facility location. In summary, no potential adverse effects to Native American religious and traditional values have been identified related to this alternative.

4.14.12 Additional Monitoring and Mitigation

No additional monitoring is required. Three resources that have been identified by the tribes as potential Native American religious and traditional values include pinyon, which is analyzed in Section 4.8 Vegetation; Greater Sage-Grouse, which is analyzed in Section 4.9 Wildlife; and antelope traps, which are analyzed in Section 4.13, Cultural Resources. Mitigation measures for impacts to these resources would include avoidance and protection that would limit or minimize direct adverse effects to these resources.

With regard to specific properties or sacred sites, at this time, no properties of traditional religious and cultural importance, including TCPs and sacred sites, have been identified by the Tribes in the study area. If tribal representatives were to identify any sites of tribal importance, impacts to these resources would be mitigated through specific operating procedures, stipulations, or mitigation measures developed in consultation with the affected tribes. Any Native American human remains discovered during construction activities would be treated in accordance with the Programmatic Agreement (Appendix 1B) and Applicant-Committed EPMs. Therefore, no additional monitoring and mitigation measures are recommended.

4.15 LAND USE AUTHORIZATION AND ACCESS

Potential impacts to land use authorization and access include impacts to land uses such as grazing, mineral exploration, recreation. Impacts can also include an increased risk to public

health and safety, primarily from increased traffic or risk of exposure to hazardous materials in the event of a release or spill during transport. Impacts to BLM grazing allotments are analyzed in Section 4.10, Range Resources. Impacts to recreation are described in Section 4.17, Recreation. Impacts associated with transport of hazardous materials and wastes are analyzed in Section 4.20. Under any of the alternatives, access to the Duckwater Shoshone Reservation would be similar to current conditions.

4.15.1 Analysis Areas

The analysis areas are the same areas used for Wild Horses (Section 4.12).

4.15.2 Indicators

Indicators used to assess potential impacts to land use authorization and access include the following:

- Number of vehicles or number of average daily trips, proposed number and frequency of vehicles transporting hazardous materials to the mine.

4.15.3 Proposed Action (Alternative 1)

Under the Proposed Action Midway would obtain all required land use authorizations and permits as described in Section 1.9 and would comply with the applicable land use plans, zoning ordinances and policies of potentially affected governmental entities, including White Pine and Eureka Counties. The potential for hazardous materials or other wastes to spill and subsequently affect land use would be minimized through design measures described in Section 2.3 including but not limited to lining the heap leach and tailings storage facilities, installing leak detection systems at these two facilities; sealing of the process plant floor slabs, floor sumps, and walls; secondary containment of process plant tanks, establishment of containment areas, construction of berms upgradient of facilities to prevent run-on, and installation of other stormwater control measures.

In addition, the potential for spills to occur and affect land use would be minimized through implementation of the Spill Contingency and Emergency Response Plan (Midway 2013a) and fluid management and monitoring plan that Midway would prepare as part of the WPCP application process.

Construction

Under the Proposed Action, approximately 6 acres of vegetation could be impacted during construction of the proposed second well and associated power line and maintenance road. Approximately 7 acres of vegetation would be removed during construction of the proposed county road re-route, and an additional 22 acres may be removed if White Pine County decides to widen the road, for a total potential disturbance of 29 acres. Approximately 51 acres of vegetation would be removed for the proposed power poles and associated maintenance road.

Existing roads (Figure 1.1-2) would be used as the main access route for commercial truck traffic and employees. The main access route leads from US 50 south on Green Springs Road, west onto BLM 1179/ CR 1204, and south on Easy Junior Road to the Plan area (Route A, Figure 4.8-1).

The average number of people employed during construction would be approximately 250, with a peak of about 300. Employees would commute to the mine from Ely or Eureka via US 50.

Busses or vans may be used to shuttle employees from Ely and/or Eureka to the mine site (Table 4.8-2). Under the Proposed Action, all workers, contractors, vendors, and visitors would be directed to use the existing main access route (Route A, Figure 4.8-1); however, a worker, contractor, vendor, or visitor may choose to use other roads that lead to the Plan area as shown on Figure 4.8-1.

Existing, baseline traffic use on the public roads in the area is not available. Estimated road use related to the Proposed Action is described in section 4.8 and summarized in Table 4.8-2. The specific locations of the proposed exploration activities are not yet defined; therefore, site-specific estimates of increases in vehicular traffic and the associated potential risks of accidents on the public roads related to exploration activities in the analysis area are not quantifiable at this time.

Bulk chemicals and supplies would typically be transported to the site by trucks via US 50 and the existing main access route from either the east (Ely) or west (Eureka) and the major connecting highways including Interstate 80 (I-80), US 93, and SR 278. Table 2.3-4 describes the number of expected shipments for reagents to the site. No road use data on these roads are available; however, minimal traffic (Table 3.15-1) is known to use these roads at present. Observations over time by various BLM staff indicate that these roads are used occasionally by local residents or recreationists.

To analyze the potential effects of increased traffic on these roads, the BLM estimated use that could result from the Proposed Action and alternatives. Table 4.8-2 shows these estimates, which are based on the number of employees anticipated during construction and operation, the number of deliveries anticipated during operations as presented in Table 2.3-4 (Fuels, Reagents, Volumes, and Shipments), and information being gathered during construction of the nearby Pan Mine.

Increased traffic on public roads in the vicinity of the project would result in a proportionate increase in the risk of traffic accidents, noise and air emissions from project-related vehicles and equipment, and fugitive dust from road use. Midway would control fugitive dust emissions from roads using water or chemical dust suppressant application where appropriate. Impacts to public health and safety associated with the noise, vehicle emissions, and fugitive dust are analyzed in Section 4.7, Air Quality.

During the construction period, additional vehicles and equipment traveling on public roads may result in a proportionate increase in the rate of road degradation. The BLM FLPMA Title V road right-of-way grant stipulations and road use agreements with White Pine and Nye Counties would allow Midway to perform road maintenance and snow removal on roads that lead to the Plan area.

Based on BLM traffic estimates (Table 3.15-1), the Proposed Action is anticipated to result in a minimal increase in AADT during the construction period; however, the increased vehicular traffic could be noticeable on some county or BLM roads. Disruptions to local traffic circulation would be short term because delays to public travel would typically be no more than 15 or 20 minutes in duration. The effects to public transportation would be of low intensity, temporary in duration, and primarily limited to the immediate areas near the Plan area.

With implementation of the Applicant-Committed EPMs described in Table 2.3-8, the risk of accidents on public roads would be similar to current conditions and the probability of an accident resulting in a release to the environment is low.

The increase in the number of people accessing the project area related to mining activity may impact security of private property and require additional effort on the part of land owners and the local sheriff to maintain public safety and the security of private property.

No impacts to existing ROWs or areas with special designations are anticipated under the Proposed Action.

Most oil and gas leases established within the analysis area are either in areas outside the fenced mine area boundary or in areas associated with roads or power lines. No impacts to the availability of these leased minerals would occur. Leases in Township 15N, Range 56E Sections 4, 9, 10, 15, and 16 are within the fenced mine area and partially overlap with proposed mine features. Surface access to these leases would be impacted under the Proposed Action, as would access to the subsurface leased minerals unless directional drill methods are employed from outside the mine facilities. These leases expire in 2021.

Implementation of the Proposed Action would have impacts on the accessibility of oil and gas minerals on those leases during the lease period. No geothermal nominations have been established within the analysis area; therefore, there would be no effects to the accessibility of geothermal resources. Implementation of the Proposed Action would not adversely affect any existing mine leases within the analysis area.

Operations, Maintenance and Reclamation

Under the Proposed Action, impacts during operations, maintenance and reclamation would be similar to those described for construction.

Mine-related heavy truck use during operations reflects the number of anticipated delivery trucks per month indicated in Table 2.3-4, assuming 30 days in one month, plus one more truck per 7-day week. This information was used to calculate average daily use on routes leading from US 50 and Duckwater Road to the Plan area, and is summarized in Table 4.8-2. For safety purposes during operations, public access to active mining areas would be restricted and traffic control measures would be implemented to minimize impacts to public travel, including posting speed limit signs on mine access routes and on other roads throughout the project area and enforcing speed limits.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Short-term or long-term loss of access to public lands or mineral resources could occur.

Reclamation activities associated with roads are described in Section 2.3.16. As determined by BLM, roads on public lands that are suitable for public access or that continue to provide public access consistent with pre-mining conditions would not be reclaimed at closure. Roads without a defined post-mining use would be reclaimed when they are no longer needed. The proposed reclamation activities and post-mining land uses are designed to be in conformance with the Ely District Approved Resource Management Plan (BLM 2008b) and White Pine County zoning ordinances. The main route consists of BLM and county roads, and would not be reclaimed.

With implementation of the Applicant-Committed EPMs described in Table 2.3-8, the risk of accidents on public roads would be similar to current conditions.

4.15.4 Northern Power Line Route Alternative (Alternative 2)

Construction, operation, maintenance and reclamation under this alternative would result in similar types, intensities, and duration of impacts as those described for the Proposed Action. This alternative would include a 3.6-mile long power line (7.1 miles shorter than the Proposed Action power line). Approximately 33 fewer acres of short-term disturbance to BLM-administered

public land would occur due to the shorter the length of the power line. This disturbance would be reclaimed. impacts from long-term surface disturbance that would not be reclaimed would be similar to those described under the Proposed Action.

No additional mining claims, oil and gas leases, or geothermal nominations would be affected.

4.15.5 Southern Power Line Route Alternative (Alternative 3)

Construction, operation, maintenance and reclamation under this alternative would result in similar types, intensities, and duration of impacts as those described for the Proposed Action. This alternative would include installation of a 4-mile long power line (6.7 miles shorter than the Proposed Action power line). Approximately 34 fewer acres of short-term disturbance to BLM-administered public land would occur, due to the shorter length of the power line. This disturbance would be reclaimed. Impacts from long-term surface disturbance that would not be reclaimed would be similar to those described under the Proposed Action.

The oil and gas leases present in Township 15N, Range 55E, Sections 2, 11, and 12 would not be adversely affected by the construction or operation of the power line or associated maintenance road under this alternative.

4.15.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

Construction, operation, maintenance and reclamation under this alternative would result in similar types, intensities, and duration of impacts as those described for the Proposed Action.

Construction of a power transmission line and maintenance road along the Northern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities.

For this alternative, 64 more acres of short-term surface disturbance would occur compared to the Proposed Action. This disturbance would be reclaimed. Impacts from long-term surface disturbance that would not be reclaimed would be similar to those described under the Proposed Action.

With implementation of the Applicant-Committed EPMs described in Table 2.3-8, the risk of accidents on public roads would be similar to current conditions.

No additional mining claims, oil and gas leases, or geothermal nominations would be affected.

4.15.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

Construction, operation, maintenance and reclamation under this alternative would result in similar types, intensities, and duration of impacts as those described for the Proposed Action.

Construction of a power transmission line and maintenance road along the Southern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities.

For this alternative, 72 more acres of short-term surface disturbance would occur compared to the Proposed Action. This disturbance would be reclaimed. Impacts from long-term surface disturbance that would not be reclaimed would be similar to those described under the Proposed Action.

With implementation of the Applicant-Committed EPMs described in Table 2.3-8, the risk of accidents on public roads would be similar to current conditions.

No additional mining claims, oil and gas leases, or geothermal nominations would be affected.

4.15.8 Modified County Road Re-Route Alternative (Alternative 6)

Construction, operation, maintenance and reclamation under this alternative would result in similar types, intensities, and duration of impacts as those described for the Proposed Action. If White Pine County widens the county road re-route, the widening could result in approximately 28 acres of long-term surface disturbance, which is 1 less acre than would occur under the Proposed Action.

No additional mining claims, oil and gas leases, or geothermal nominations would be affected.

4.15.9 Western Tailings Storage Facility Alternative (Alternative 7)

Construction, operation, maintenance and reclamation under this alternative would result in similar types, intensities, and duration of impacts as those described for the Proposed Action. Under this alternative the fenced mine area would enclose 7,049 acres, or approximately 1,708 fewer acres, compared to the Proposed Action fenced mine area. Overall, 118 fewer acres of total surface disturbance would occur under this alternative. The smaller facility footprint would require only 44 acres of stormwater controls that would not be reclaimed, compared to 82 acres under the Proposed Action. As a result, 38 fewer acres of long-term surface disturbance that would not be reclaimed would occur.

No additional mining claims, oil and gas leases, or geothermal nominations would be affected.

4.15.10 No Action Alternative (Alternative 8)

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no associated project impacts and no change in existing land use authorizations. There would be no project-related impacts to land use or access beyond the exploration activities which are already approved as described in Section 2.2. Previously authorized exploration activities would continue and could affect up to 267 acres BLM-administered rangeland within the amended 2011 exploration area (BLM 2012j). Access would continue to be available via several maintained roads as well as smaller jeep trails requiring 4×4 vehicles (BLM 2012j).

4.15.11 Preferred Alternative (Alternative 9)

Construction, operation, maintenance, and reclamation under this alternative (Figure 2.4-4) would result in types, intensities, and duration of impacts similar to those described for the Proposed Action.

Construction of a power transmission line and maintenance road along the Southern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the Northwest Main Access Route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, the Proposed Action main access route was upgraded several years ago, and no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way would be required during road maintenance activities. With implementation of the Applicant-Committed EPMs described in Table 2.3-8, the risk of accidents on public roads would be similar to current conditions.

If White Pine County widens the Modified County Road Re-Route, the widening could result in approximately 28 acres of long-term surface disturbance, which is 1 less acre than would occur under the Proposed Action.

The smaller facility footprint associated with the Western Tailings Storage Facility would result in 38 fewer acres of disturbance that would not be reclaimed, minimizing impacts to land use access and authorization.

In summary, under this alternative, 45 fewer acres of surface disturbance would occur compared to the Proposed Action. Approximately 39 fewer acres of long-term surface disturbance that would not be reclaimed would occur.

No additional mining claims, oil and gas leases, or geothermal nominations would be affected.

4.15.12 Additional Monitoring and Mitigation

No additional monitoring is required. No mitigation measures would be required.

4.16 VISUAL RESOURCES

Using the VRM system described in Section 3.16, the analysis for visual resources involves determining whether the potential visual impacts from proposed surface-disturbing activities or actions would meet the management objectives established for the area, or whether design adjustments would be required.

A visual contrast rating process was used for this analysis. The basic design elements of form, line, color, and texture were used to compare the project features with the major features in the existing landscape (BLM 1986b). This analysis was used to identify levels of visual contrast that would be associated with proposed project facilities as viewed from the four KOPs (Figure 3.16-1). A comparison of the proposed project features that would be visible under each alternative and the existing landscape features was performed for each KOP. Visual contrast rating forms for the four KOPs are included in Appendix 3E.

For three of the four KOPs, computer-generated visual simulations were developed to aid in visualizing the changes that would be imposed on the existing viewshed during the operational

phase of each alternative. A computer-generated visual simulation is created by taking a photograph of the existing landscape at a KOP, then modifying the photograph to show the proposed project and its associated changes to the landscape on the photograph. Three visual simulations were created and reviewed to identify the form, line, color, and texture that would characterize the proposed project. This information was compared to the form, line, color, and texture elements of the existing landscape to quantify the degree of contrast an alternative would be expected to have. The results of this comparison and expected degree of contrast were applied to determine the potential for each alternative to impact visual resources.

Under any of the action alternatives, there would be some degree of visual change to the analysis area because a few project components and areas cleared of vegetation would be visible from some publicly-accessible locations even though these locations are remote and seen by a relatively small number of people. Figure 3.16-1 shows that most of the project components would be located within an area that that is managed as VRM Class IV as described in Section 3.16. In VRM Class IV areas, the level of change to the characteristic landscape can be high and management activities may dominate the view and be the major focus of viewer attention (BLM 2008b).

Under any of the action alternatives, artificial lighting for mine facilities would be in compliance with MSHA illumination requirements for worker safety. Light pollution from project facilities could impact visibility of the nighttime sky in the vicinity of the proposed project. Midway would implement the Applicant-Committed EPMs described in Table 2.3-8 to minimize effects night skies. For example, within the fenced mine area, anti-glare light fixtures with fugitive light control designs would be used to limit light pollution. Light fixtures would be placed of at the lowest practical height and directed at the ground and/or work areas to avoid being cast skyward or over long distances. Shields and/or louvers would be used on light fixtures and full cut-off type fixtures would be used where possible.

4.16.1 Analysis Areas

The analysis areas are the same areas used for Wild Horses (Section 4.12).

4.16.2 Indicators

Indicators used to assess potential impacts to visual resources include the following:

- View from KOPs and visual simulations.

4.16.3 Proposed Action (Alternative 1)

Under the Proposed Action, project-related structures and facilities would introduce new elements and visual contrasts compared to the existing landscape character. Mine-related traffic would use the main access route for the life of the mine. The Proposed Action is anticipated to result in up to 354 daily trips during construction, and up to 292 daily trips during operation as shown in Table 4.8-2 and described in Section 4.8.3.

During the construction period, the presence of workers, vehicles and vehicle lights, heavy equipment, the bustle of activities and associated dust would detract from the visual quality of the landscape in the immediate vicinity of the proposed activities. Although slopes and vegetative screening would likely obscure direct views of project-related activities and facilities, at times vehicle lights and dust raised by vehicle movements would be visible.

During construction, short-term visual impacts from vegetation clearing, grading, and construction of the mine-related facilities would occur. Construction of the power line corridor and maintenance road would result in a new continuous band of moderate to strong contrasting forms, colors, and textures compared to existing conditions.

The project components and facilities would appear as visible alterations to the existing landscape within portions of the analysis area for the life of the project. Visual effects would be localized and the facilities would not be visible in the foreground from US 50 or SR 379 or the Duckwater Shoshone Reservation or other well-traveled, publicly accessible viewing areas. Concurrent reclamation during operation of the proposed project would reduce the degree of contrast between the existing landscape features and the proposed project. Buildings would be painted with colors selected from the BLM Standard Environmental Color Chart. The exterior surfaces of any buildings or ancillary facilities visible from any project KOPs would be painted with non-reflective shale green if located in pinyon-juniper vegetation or shadow gray if located in shrublands or other open areas. Other non-reflective carob brown, or as determined by the BLM, may be used in place of shale green or shadow gray. Any structures or facilities within the mined areas would be painted non-reflective colors of paint, as determined by the BLM.

The analysis area is within the GBNHA and a portion of the existing main access route is within the Loneliest Highway SRMA along US 50 (Figure 3.15-1). No road improvements, disturbances or proposed facilities would be constructed within the SRMA. There are no proposed facilities within the analysis area that would visually impact visitors to the SRMA.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Visual intrusion into the natural landscape could occur.

During night hours, the Proposed Action would have a substantially different type of impact on visual resources than during day hours. Most of the form, line, color, and texture elements of the proposed project and the existing landscape features would not be visible from the KOPs or elsewhere during the night. However, lights would be used on project equipment and vehicles during night time operations, and stationary lights positioned at various locations within the mine area. Use of project lights would contribute to the illumination of night sky in an area that is largely uninhabited. The night sky over uninhabited, dark areas is optimal for viewing stars and constellations. As illumination of the night sky is increased over an uninhabited and dark area, the number of astral and stellar features that are visible from that area is reduced, and thus the night sky is adversely impacted. Illumination resulting from use of the proposed project lights could have an impact on viewing night sky because there are very few existing light sources in the area and the ambient light level is very low.

The lights associated with proposed project would have a strong contrast against the black backdrop of the night when looking directly at them, as opposed to viewing the sky near them. Because there are very few existing lights sources in the area and the ambient light level is very low, any lights used for the proposed project would be surrounded by an otherwise dark, unlit background. The brightness of the lights and darkness of the black or nearly black background would create a strong contrast, and thus make the lights readily visible.

In the analysis area, the lights are unlikely to be visible to casual observers traveling on US 50 or Duckwater Road because the highways are more than 15 miles from the proposed project and much of the light would be blocked by topography and vegetation. The haul road berms would likely block the lights of smaller vehicles using haul roads and minimize the visibility of the lights

associated with the larger equipment. In the pit and WRDAs, the lights and equipment would be blocked by the pit walls. Implementation of the Applicant-Committed EPMs described in Table 2.3-8 would help to minimize effects to visual resources. For example, disturbances would be reclaimed as soon as activities are complete to restore vegetative cover. Within the fenced mine area, additional Applicant-Committed EPMs such as anti-glare light fixtures with fugitive light control designs would be used to limit light pollution; light fixtures would be placed of at the lowest practical height and directed at the ground and/or work areas to avoid being cast skyward or over long distances; shields and/or louvers would be used on light fixtures and full cut-off type fixtures would be used where possible.

Most of the disturbances and proposed project facilities visible from publicly accessible areas would be located in the background or seldom seen areas within areas designated as BLM VRM Class IV as shown on Figure 3.16-1. These VRM classes allow for moderate to major changes to the landscape during construction, operation, and reclamation of the proposed project. The changes to the scenic quality of the existing landscape at each KOP (Figure 3.16-1) as a result of the addition of these elements are described below. The degree of contrast that the form, line, color, and texture elements of the proposed project would have with the features of the existing landscape at each KOP is also described below.

KOP 1

A visual simulation was not prepared for KOP 1. Based on the position of the KOP relative to the proposed project components and existing topography of the landscape, the proposed project components that would be visible from this KOP include the North and South WRDAs and the heap leach pile.

The North and South WRDAs would be dark brown, flat or rounded forms. The proposed heap leach pile would be medium to light brown. The color of the WRDAs would represent a moderate to strong degree of contrast with the colors of surrounding vegetation cover. These components would be in the background area.

The proposed North and South WRDAs and heap leach pile would be located in an area managed as VRM Class IV. The moderate to strong degree of contrast that the proposed WRDAs and heap leach pile would have with the form, line, and color elements of the existing landscape conforms to the management objectives of VRM Class IV.

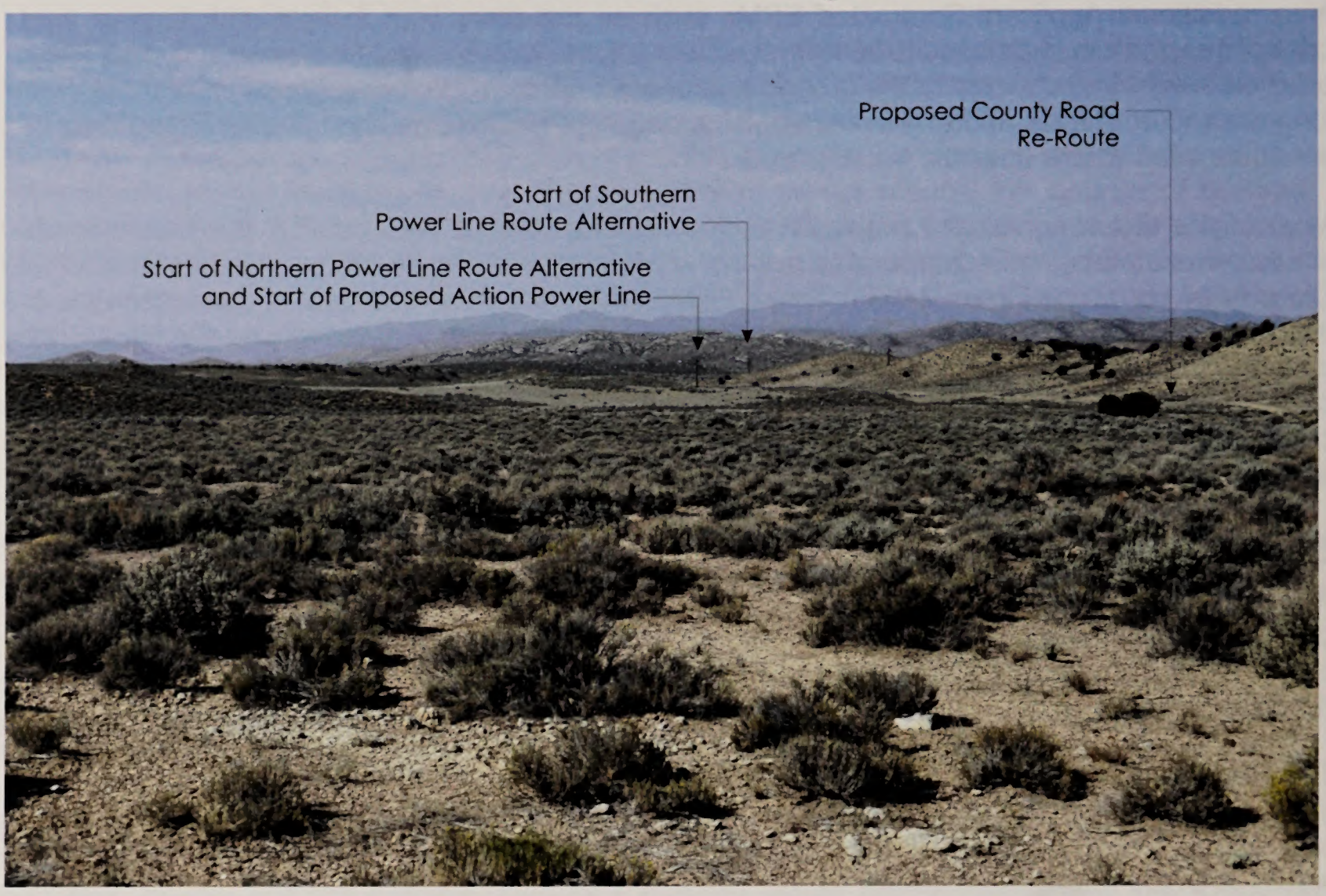
KOP 2

KOP 2 would be observed by casual observers traveling on BLM Road 4006 and on CR 1177. Based on the visual simulation, a few of the Proposed Action power line poles would be visible from KOP 2. The proposed power line poles visible from KOP 2 would be located in an area designated as VRM Class IV. Under the Proposed Action, Northern Power Line Route Alternative, Southern Power Line Route Alternative, Modified County Road Re-Route Alternative and Western Tailings Storage Facility Alternative, if White Pine County decides to widen the proposed county road re-route to approximately 30 feet, a small portion of the widened BLM 4006 would be visible from KOP 2. The portion of BLM 4006 visible from KOP 2 would be located in an area designated as VRM Class IV.

The proposed power line poles (monopoles) would appear as thin vertical lines in the middleground area. The proposed power line would represent a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape because it would be more than three miles away, low on the horizon, and the dark poles would blend into

the dark background. The proposed project components would conform to the management objectives of VRM Class IV.

Visual Simulation of KOP 2 Looking Southwest



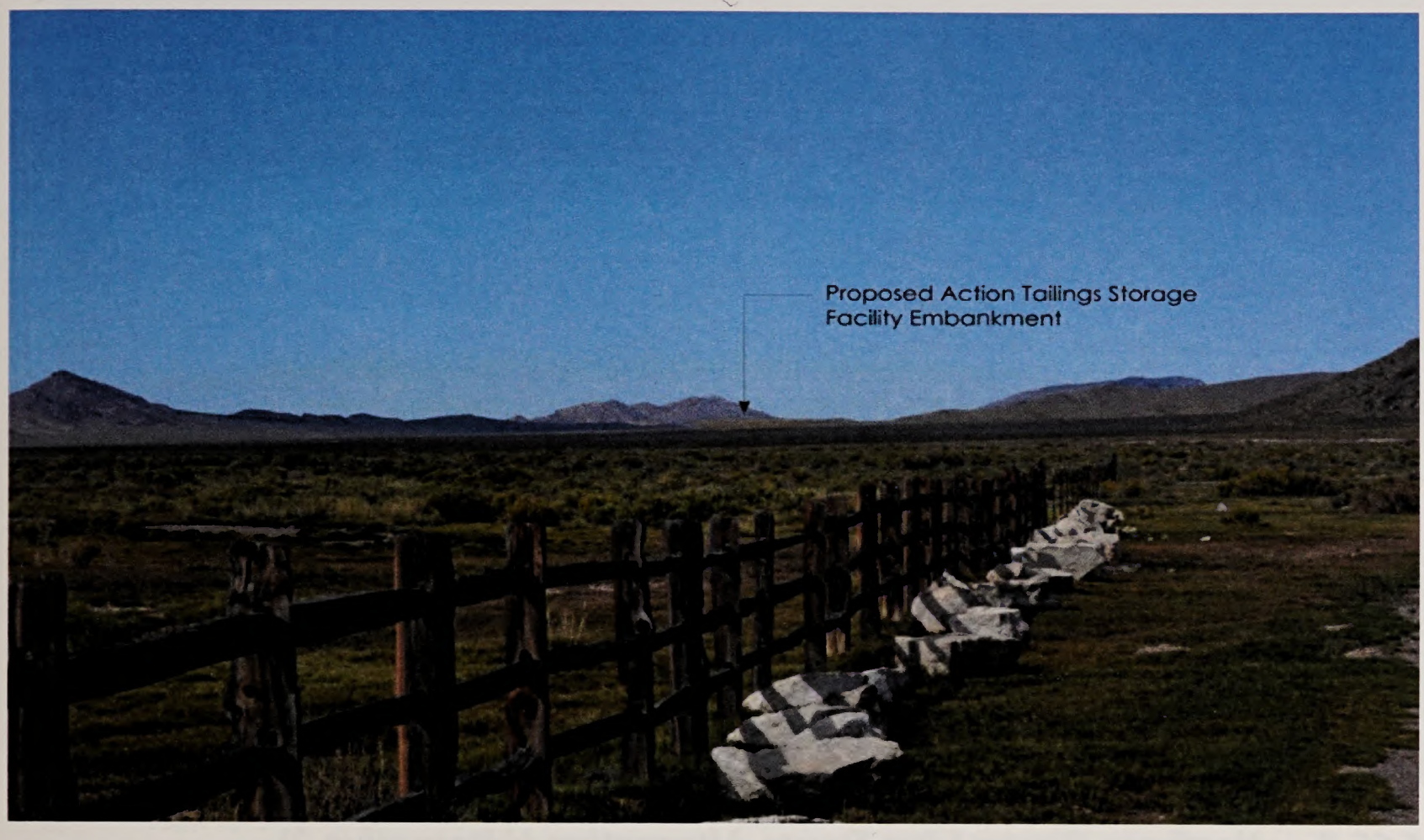
If White Pine County decides to widen the proposed county road re-route, the widened portion of the BLM 4006 would introduce a thin horizontal line, which would not be vegetated during operations; therefore, the tan to light brown colors and fine to medium texture of the unvegetated portions of the widened portion of BLM 4006 would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover. The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area. The proposed project components would conform to the management objectives of VRM Class IV.

KOP 3

Based on the visual simulation, portions of the Proposed Action TSF embankment would be visible from KOP 3. The portions of the Proposed Action TSF embankment visible from KOP 3 would be located in an area designated as VRM Class IV. This KOP would be observed by casual observers traveling on SR 379 and occupants of the Duckwater Shoshone Reservation. The Proposed Action TSF embankment would introduce a flat or rounded near horizontal or irregular, rectangular or trapezoidal landform at the skyline in the middleground area at the skyline and would remain unvegetated during operations; therefore, the brown colors and fine to medium texture of the TSF embankment would contrast with the green colors and medium to course textures of the existing surrounding vegetation. The Proposed Action TSF would represent a weak degree of contrast relative to the form, line, color and texture elements of the existing landscape of the surrounding middleground area because the proposed landform would be approximately

15 miles away, low on the horizon, and is anticipated to blend into the horizon and be difficult to discern from the background. The Proposed Action TSF embankment would conform to the management objectives of VRM Class IV.

Visual Simulation of KOP 3 Looking North



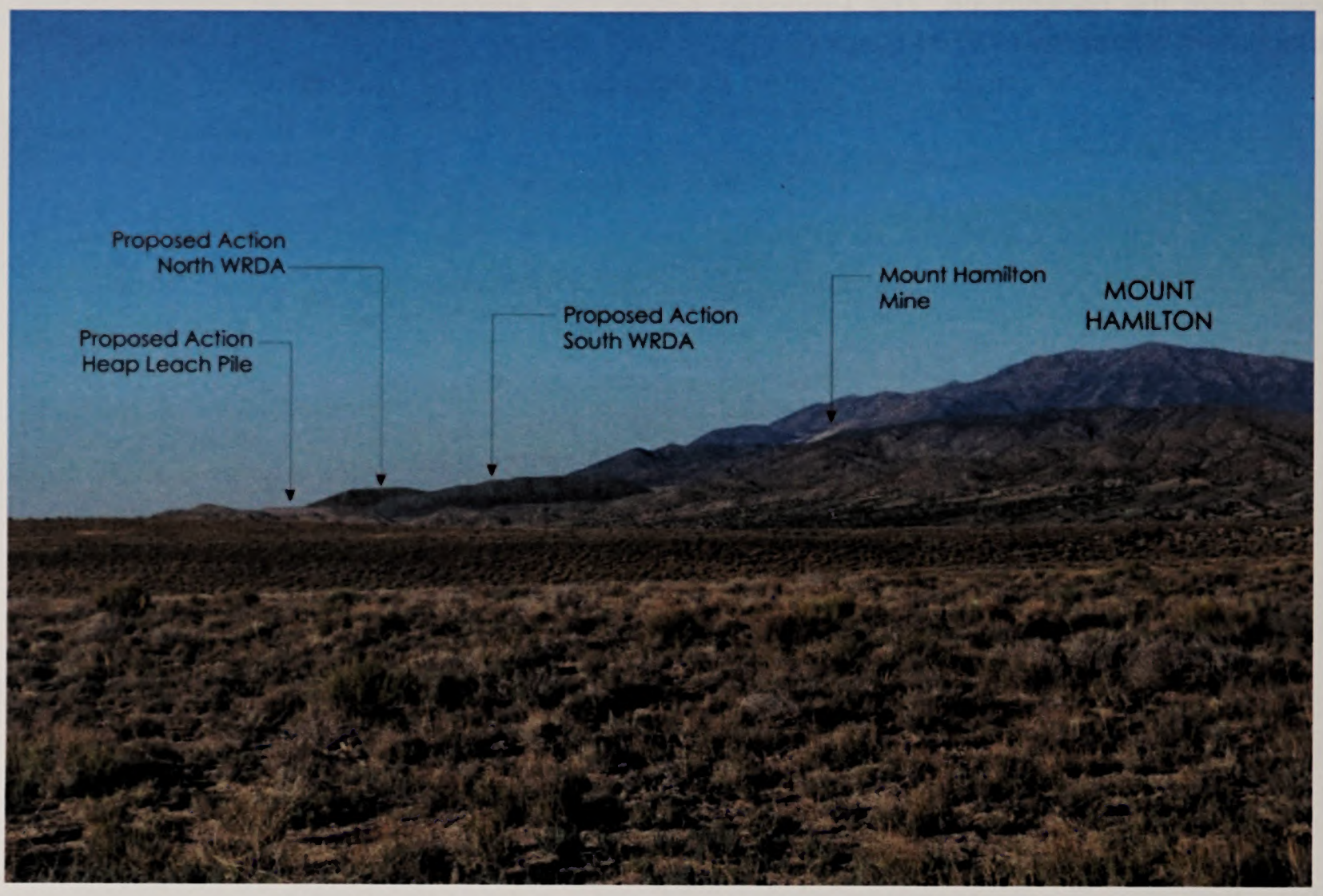
KOP 4

Based on the visual simulation, the proposed heap leach pile and North and South WRDAs would be visible from KOP 4. The portions of the proposed heap leach pile and North and South WRDAs visible from KOP 4 would be located in an area managed as VRM Class IV. KOP 4 would be observed by casual observers traveling on SR 379.

The heap leach pile would be medium to light brown. The North and South WRDAs would appear as dark brown, flat or rounded forms. The color of both the heap leach pile and the WRDAs would be the direct effect of an absence of vegetation cover during operation of the proposed project. The proposed heap leach pile and WRDAs would introduce flat to rounded, near horizontal and irregular lines below the horizon and would remain unvegetated during operations; therefore, the brown colors and fine to medium textures of the proposed landforms would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation.

The visible portions of the proposed activity would represent a weak to moderate degree of contrast relative to the form, line, color and texture elements of the existing landscape of the surrounding middleground area because the proposed landforms would be approximately 8 miles away, and are anticipated to blend into the horizon and be difficult to discern from the background. The proposed heap leach pile and WRDAs would conform to the management objectives of VRM Class IV.

Visual Simulation of KOP 4 Looking Northeast



4.16.4 Northern Power Line Route Alternative (Alternative 2)

Visual effects for the proposed facilities within the Plan area would be similar in type, intensity and duration as those described for the Proposed Action. Under this alternative, the power line route would be shorter relative to the Proposed Action power line, and in a different location. Based on the visual simulation, portions of this proposed alternative power line would appear as thin vertical lines in the middleground area of KOP 2 (Visual Simulation of KOP 2 Looking Southwest). Those portions of the power line visible from KOP 2 would be located in an area designated as VRM Class IV. The proposed project facilities would represent a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape because it would be more than three miles away, low on the horizon, and the dark poles would blend into the dark background. The project components would conform to the management objectives of VRM Class IV.

4.16.5 Southern Power Line Route Alternative (Alternative 3)

Visual effects for the proposed facilities within the Plan area would be similar in type, intensity and duration as those described for the Proposed Action. Under this alternative, the power line would be shorter and in a different location compared to the Proposed Action power line. Based on the visual simulation, portions of the proposed power line under this alternative would appear as thin vertical lines in the background area of KOP 2 (Visual Simulation of KOP 2 Looking Southwest). The portions of the power line that would be visible from KOP 2 would be located in an areas designated as VRM Class IV. The proposed project facilities would represent a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the

existing landscape because the proposed alternative power line would more than three miles away, low on the horizon, and the dark poles would blend into the dark background. The project components would conform to the management objectives of VRM Class IV.

4.16.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

Visual effects of the proposed facilities within the Plan area would be similar in type, intensity, and duration to those described for the Proposed Action. Under this alternative, a different main access route and a different power line route would be used compared to the Proposed Action (Figure 2.4-2). Visual impacts associated with the power line under this alternative would be similar to those described for the Northern Power Line Route Alternative in the sections above.

Based on the visual simulation, a segment of the widened BLM 4006 would be visible from KOP 2 (Visual Simulation of KOP 2 Looking Southwest). The portion of BLM 4006 that would be visible in KOP 2 would be located in an area designated as VRM Class III. The widened road would appear as a thick horizontal line within the middleground area. The road would not be vegetated during operations; therefore, the tan to light brown colors and fine to medium texture of the unvegetated portions of the proposed road would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover.

The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area because the road would be more than 5 miles away, low on the horizon, and is anticipated to blend into the horizon and be difficult to discern from the background. This segment of widened road along the alternative main access is not expected to dominate the view of the casual observer; therefore would conform to the management objectives of VRM Class III.

4.16.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

Visual effects of the proposed facilities within the Plan area would be similar in type, intensity and duration to those described for the Proposed Action. Under this alternative, a different main access route and a different power line route would be used compared to the Proposed Action (Figure 2.4-2). Visual impacts associated with the proposed power line included in this alternative would be the same as those described for the Southern Power Line Route Alternative. Visual impacts associated with the proposed alternative main access route (Figure 2.4-2) would be visible from KOP 2 as described in the following paragraph.

Based on the visual simulation, a segment of the widened BLM 4006 would be visible from KOP 2 (Visual Simulation of KOP 2 Looking Southwest). The portion of BLM 4006 that would be visible in KOP 2 would be located in an area designated as VRM Class III. The widened road would appear as a thick horizontal line within the middleground area. The road would not be vegetated during operations; therefore, the tan to light brown colors and fine to medium texture of the unvegetated portions of the proposed road would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover.

The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area because the road would be more than 5 miles away, low on the horizon, and is anticipated to blend into the horizon and be difficult to discern from the background. This segment of widened

road along the alternative main access is not expected to dominate the view of the casual observer; therefore would conform to the management objectives of VRM Class III.

4.16.8 Modified County Road Re-Route Alternative (Alternative 6)

Visual effects would be similar in type, intensity, and duration to those described for the Proposed Action. Relative to the Proposed Action, the county road re-route would use only existing roads under this alternative.

Under the Modified County Road Re-Route Alternative, a small portion of the proposed route would be visible from KOP 2 (Visual Simulation of KOP 2 Looking Southwest). The portion of the route visible from KOP 2 is located in an area designated as VRM Class III. KOP 2 would be observed by casual observers traveling on BLM Road 4006 and on CR 1177.

In the future, if White Pine County widens the Modified County Road Re-Route, the proposed road re-route would introduce a thin horizontal line, portions of which would not be vegetated during operations; therefore, the tan to light brown colors and fine to medium texture of the unvegetated portions of the proposed road would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover. The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area because the road would be more than 5 miles away, low on the horizon, and are anticipated to blend into the horizon and be difficult to discern from the background. The proposed road would conform to the management objectives of VRM Class III.

4.16.9 Western Tailings Storage Facility Alternative (Alternative 7)

Visual effects would be similar in type, intensity, and duration to those described for the Proposed Action. Under the Western TSF Alternative, a small portion of the southern embankment of the Western TSF would be visible from KOP 3 (Visual Simulation of KOP 3 Looking North). The portion of the Western TSF visible from KOP 3 would be located in an area designated as VRM Class IV. This KOP would be observed by casual observers traveling on SR 379 and occupants of the Duckwater Shoshone Reservation.

The Western TSF embankment would introduce a flat or rounded near horizontal or irregular, rectangular or trapezoidal landform at the skyline in the middleground area at the skyline and would remain unvegetated during operations; therefore, the brown colors and fine to medium texture of the Western TSF embankment would contrast with the green colors and medium to course textures of the existing surrounding vegetation. The Western TSF would represent a weak degree of contrast relative to the form, line, color and texture elements of the existing landscape of the surrounding middleground area because the proposed landform would be approximately 15 miles away, low on the horizon, and is anticipated to blend into the horizon and be difficult to discern from the background. The Western TSF embankment would conform to the management objectives of VRM Class IV.

4.16.10 No Action Alternative (Alternative 8)

Under the No Action Alternative, the proposed project would not be constructed as planned. There would be no project-related impacts to visual resources beyond the previously authorized exploration activities described in Section 2.2.

4.16.11 Preferred Alternative (Alternative 9)

Under this alternative, visual effects of the proposed facilities within the Plan area would be similar in type, intensity and duration to those described for the Proposed Action. Under this alternative, visual impacts associated with the Northwest Main Access Route would be visible from KOP 2. Based on the visual simulation (Visual Simulation of KOP 2 Looking Southwest), a segment of the widened BLM 4006 would be visible from KOP 2. The portion of BLM 4006 that would be visible in KOP 2 would be located in an area designated as VRM Class III. The widened road would appear as a thick horizontal line within the middleground area. The road would not be vegetated during operations; therefore, the tan to light brown colors and fine to medium texture of the unvegetated portions of the proposed road would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover. Construction of the Northwest Main Access Route would result in a weak to moderate degree of contrast in form, line, color, and texture relative to the elements of the existing landscape in the surrounding middleground area because the road would be more than 5 miles away, low on the horizon, is anticipated to blend into the horizon, and would be difficult to discern from the background. This segment of widened road along the Northwest Main Access Route is not expected to dominate the view of the casual observer; therefore, it would conform to the management objectives of VRM Class III.

Visual impacts associated with the Southern Power Line would be the same as those described for the Southern Power Line Route Alternative: The power line would be shorter and in a different location compared to the Proposed Action power line. Based on the visual simulation (Visual Simulation of KOP 2 Looking Southwest), portions of the Southern Power Line would appear as thin vertical lines in the background area of KOP 2. The portions of the power line that would be visible from KOP 2 would be located in an area designated as VRM Class IV. The proposed project facilities would represent a weak to moderate degree of contrast in form, line, color, and texture relative to the elements of the existing landscape because the proposed alternative power line would more than 3 miles away, low on the horizon, and the dark poles would blend into the dark background. The project components would conform to the management objectives of VRM Class IV.

Relative to the county road re-route under the Proposed Action, the Modified County Road Re-Route would use only existing roads. No new surface disturbance would occur unless in the future White Pine County decides to widen the road. A small portion of the Modified County Road Re-Route would be visible from KOP 2 (Visual Simulation of KOP 2 Looking Southwest). The portion of the route visible from KOP 2 is located in an area designated as VRM Class III. KOP 2 would be observed by casual observers traveling on BLM Road 4006 and on CR 1177.

In the future, if White Pine County widens the Modified County Road Re-Route, the widened road would introduce a thin horizontal line, portions of which would not be vegetated during operations; therefore, the tan to light brown colors and fine to medium texture of the unvegetated portions of the proposed road would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover. The proposed activity would result in a weak to moderate degree of contrast in form, line, color, and texture relative to the elements of the existing landscape in the surrounding middleground area because the road would be more than 5 miles away, low on the horizon, is anticipated to blend into the horizon, and would be difficult to discern from the background. The proposed road would conform to the management objectives of VRM Class III.

With construction of the Western TSF, a small portion of the southern embankment of the Western TSF would be visible from KOP 3 (Visual Simulation of KOP 3 Looking North). The portion of the

Western TSF visible from KOP 3 would be located in an area designated as VRM Class IV. This KOP would be observed by casual observers traveling on SR 379 and occupants of the Duckwater Shoshone Reservation.

The Western TSF embankment would introduce a flat or rounded near horizontal or irregular, rectangular, or trapezoidal landform at the skyline in the middleground area and would remain unvegetated during operations; therefore, the brown colors and fine to medium texture of the Western TSF embankment would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation. The Western TSF would represent a weak degree of contrast relative to the form, line, color, and texture elements of the existing landscape of the surrounding middleground area because the proposed landform would be approximately 15 miles away, low on the horizon, is anticipated to blend into the horizon, and would be difficult to discern from the background. The Western TSF embankment would conform to the management objectives of VRM Class IV.

In summary, visual impacts associated with construction of the Northwest Main Access Route, visible from KOP2, would conform to the management objectives of VRM Class III. Visual impacts associated with components of the Southern Power Line, visible from KOP 2, would conform to the management objectives of VRM Class IV. If White Pine County decides to widen the Modified County Road Re-Route in the future, impacts from the proposed road widening, visible from KOP 2, would conform to the management objectives of VRM Class III. A small portion of the southern embankment of the Western TSF, visible from KOP 3, would conform to the management objectives of VRM Class IV.

4.16.12 Additional Monitoring and Mitigation

No additional monitoring is required. No mitigation measures are required.

4.17 RECREATION

This section describes the effects of the Proposed Action and alternatives on recreational resources. Potential impacts to recreational resources include restricted access to recreational land and degradation of the quality of the public experience in areas near the mine activities.

The Proposed Action and alternatives are located entirely on BLM-administered land (Figure 1.1-2), which is available for dispersed recreation, including hunting and OHV use, fishing, camping, cross-country skiing, horseback riding, caving, rock climbing, hiking, sightseeing, outdoor photography, wildlife and bird watching, heritage-related tourism, and mountain biking (BLM 2008b, 2012j; WPCPLUAC 2007). No developed recreation sites or facilities are located within the analysis area; therefore, none of the alternatives would impact developed recreation sites or facilities; however, surface disturbance and fencing would impact dispersed recreation opportunities.

4.17.1 Analysis Areas

The analysis areas are the same areas used for Wild Horses (Section 4.12).

4.17.2 Indicators

Indicators used to assess potential impacts to recreational resources include the following:

- Potential restricted access to recreational use areas.

4.17.3 Proposed Action (Alternative 1)

Construction

Under the Proposed Action, approximately 9,300 acres of BLM-administered recreational resources would be impacted and would be unavailable for OHV use or hunting during the construction period. This area would include the 8,757-acre fenced mine area (Figure 2.3-1). Recreational users would be excluded from the fenced mine area for the life of the mine for security and safety reasons. Surface disturbance would occur on approximately 140 acres outside of the fenced mine area during construction and maintenance and/or replacement of the entrance facilities, water pipeline, proposed county road re-route, power line, existing well and proposed second well. In addition, up to approximately 400 acres of exploration would occur within the Plan area. While the recreation setting would be altered in portions of the analysis area, the Proposed Action would not conflict with the existing management objectives that are stated in the Ely District Approved Resource Management Plan (BLM 2008b).

Fencing the mine area and restricting access to the enclosed area would exclude that area from use for dispersed recreation activities, negatively affecting members of the public who would otherwise use the approximately 8,800-acre area for dispersed recreation activities. This impact would be for the projected 10-year mining period until the mine is closed, the area reclaimed, and the fence removed. Public lands within the BLM Ely District and surrounding areas of public lands provide the types of dispersed recreation opportunities found within the analysis area.

A certain percentage of the recreational users unable to access desired resources or opportunities within the analysis area would be anticipated to use other areas within the Ely District and surrounding areas of public lands for dispersed recreation. However, the displacement of recreational users onto public lands outside of the analysis area could have an adverse impact on other recreational users that currently use these lands for dispersed recreation. Recreation users seeking recreation experiences of isolation and solitude while engaging in dispersed recreation would be most sensitive to increased levels of use in these areas. Public access to the analysis area would be permissible again once reclamation of the proposed project is complete. Impacts to recreation resources related to displacement of users from within the analysis area would be for the projected 10-year mining period until the mine is closed, the area reclaimed, and the fence removed.

No developed recreation sites or facilities within the analysis area. Loss of access to dispersed recreation resources in the active mining area may result in increased use of developed sites outside the area as a result of displaced recreationists. The quality of dispersed recreation on neighboring lands near the analysis area may be affected by the visual disruption of the physical presence of the project within the landscape (Section 4.16). Visual disruptions during the life of the project would change the area accessible to users that desire more primitive recreational experiences with little to no evidence of human modification to the natural landscape. Reclamation of the surface disturbance within the analysis area would reduce the visual disruption that the Proposed Action would have beyond the life of the project. However, some components of the proposed project would remain somewhat visibly evident after reclamation is completed, such as the mine pit and the ET cell.

Human modifications to the natural landscape resulting from the Proposed Action would occur within a landscape that contains existing human modifications. The analysis area either contains, or is located within close proximity to, US 50 and numerous unpaved roads . One or more of these existing modifications is visible from many areas of the neighboring lands that are located within

close proximity to the analysis area and from within the analysis area. There are large areas of public lands located elsewhere in the BLM Ely District and surrounding areas of public lands that are accessible for dispersed recreation uses and that provide primitive recreational experiences. The areas within the analysis area that are accessible to users that seek primitive recreational experiences from dispersed recreation uses occur within a landscape containing existing human modifications, such as roads and the pre-existing Easy Junior mine.

The quality of dispersed recreation on neighboring lands near the analysis area may also be affected by increased noise levels during the life of the project. Much like the visual disruption of the proposed project, increased noise would reduce the area that is accessible to recreation users that desire more primitive recreational experiences with little to no sights or sounds of humans evident. As described above, numerous unpaved roads exist in and near the analysis area. Travel on these roads contribute to the existing ambient noise in the area. Therefore, existing ambient noise in the area is partially comprised of sounds from human activities. Increased noise levels would result from operation of project equipment and vehicles, and the active construction, operation, and reclamation of the proposed project. Increased noise from the Proposed Action would occur during the life of the project. The Proposed Action would increase the volume of the ambient noise in the area, and increase the percentage comprised of sounds from human activities. The areas that would be affected by increased noise levels would be limited to those within closest proximity to the analysis area because project noise would attenuate as users move farther from the analysis area.

There are large areas of public lands located elsewhere in the BLM Ely District that are accessible for dispersed recreation uses and that provide primitive recreational experiences with little to no sounds of humans. The portions of the analysis area that are accessible to users seeking primitive recreational experiences from dispersed recreation contain existing noise sources related to human activities because of the existing roads and ongoing exploration activities.

As described in Section 4.9.3, the Proposed Action would disturb seasonal habitats for big game, including mule deer crucial winter range, and render those habitats unsuitable for use in the short term (until the mine is closed and the area is reclaimed, and the fence removed). In the short term, big game may also be displaced from areas immediately adjacent to the mine due to human presence and activity. The loss of habitat and displacement of big game from these areas would affect recreation resources by reducing the overall area available for hunting, which is the most common recreational use of the area. Displacement of game and non-game wildlife species would affect other recreation opportunities that are related to the presence of wildlife, such as bird-watching or photography. Public access to the analysis area would be restricted, which would also prevent hunting or any other recreational activities from occurring within the area. The proposed construction activities could occur during the hunting seasons of large game. The impact that wildlife displacement and restricted access would have on hunting and other wildlife-related recreation activities would last for the duration of the projected 10-year mining period, plus up to 3 years following the end of mining until reclamation and closure of each component is complete, and the fence removed. Impacts to hunting are anticipated to be minimal because the analysis area represents only a small portion of the area open to hunting within Hunt Area 13.

Following reclamation, the analysis area would be accessible for recreation uses, including hunting. Reclamation vegetation would provide wildlife habitat, but it may differ from the types of habitat that existed prior to the proposed project. Thus, the wildlife species that use the analysis area after reclamation and their pattern of use within the analysis area may change. This change would be a long-term impact on recreation resources. See Section 4.9, Wildlife, for more detailed information pertaining to the potential impacts on wildlife and wildlife habitat.

In the northern portion of the analysis area, segments of Green Springs Road (CR 5) and Easy Junior Road (CR 1177) are adjacent to US 50 and pass through parts of the Loneliest Highway SRMA (Figure 3.15-1). Mine-related traffic would travel on Green Springs Road for the life of mine. Up to approximately 354 daily trips would occur during construction as shown in Table 4.8-2 and described in Section 4.8.3. No road improvements, mine-related facilities or construction disturbances are proposed within the SRMA; therefore, public access would not be restricted in the SRMA. The recreation destinations and attractions noted to be of particular popularity, such as Cold Creek Reservoir and the Garnet Hill rock hounding area (BLM 2008b), are not located within the portion of the SRMA in which the analysis area occurs. The analysis area is also located within the GBNHA. No road improvements, disturbances or proposed facilities would be constructed within the SRMA or in the vicinity of known special resources within the GBNHA.

Construction of the proposed power line corridor and associated maintenance road could attract unauthorized OHV use. The public could make unauthorized OHV use of the power line corridor and maintenance road to access previously inaccessible public lands or create new routes to destination areas resulting in adverse impacts to natural resources in the analysis area. Impacts to recreation could include degradation of the quality of recreational resources by a network of OHV routes, however, the degree of impacts cannot be estimated as the actual level and location of unauthorized route proliferation is speculative at this time. Overall, OHV use and motorized activities are expected to continue to be concentrated on existing roads and designated trails within White Pine County similar to existing trends.

Operations, Maintenance, and Reclamation

The Applicant-Committed EPMs described in Table 2.3-8 would be implemented to help minimize effects to recreation. For example, disturbances would be reclaimed as soon as activities are complete to restore recreation access. In addition, fences associated with mining activities would be removed at the end of reclamation and closure of each component. If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Short-term or long-term loss of access to dispersed recreation could occur.

4.17.4 Northern Power Line Route Alternative (Alternative 2)

Construction, operations, maintenance and reclamation under this alternative would result in similar types, intensity and duration of impacts to recreational resources as described under the Proposed Action. Relative to the Proposed Action, under this alternative there would be approximately 33 fewer acres of disturbance to BLM-administered land available for dispersed recreation.

4.17.5 Southern Power Line Route Alternative (Alternative 3)

Construction, operations, maintenance and reclamation under this alternative would result in similar types, intensity and duration of impacts to recreational resources as described under the Proposed Action. Relative to the Proposed Action, under this alternative there would be approximately 34 fewer acres of disturbance to BLM-administered land available for dispersed recreation.

4.17.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

Construction, operation, maintenance and reclamation under this alternative would result in similar types, intensities, and duration of impacts as those described for the Proposed Action. Construction of a power transmission line and maintenance road along the Northern Power Line

Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities.

For this alternative, 64 more acres of surface disturbance would occur compared to the Proposed Action. This disturbance would be reclaimed. Impacts from long-term surface disturbance that would not be reclaimed would be similar to those described under the Proposed Action.

4.17.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

Construction, operation, maintenance and reclamation under this alternative would result in similar types, intensities, and duration of impacts as those described for the Proposed Action.

Construction of a power transmission line and maintenance road along the Southern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These pits would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, would result in no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities.

For this alternative, 72 more acres of short-term surface disturbance would occur compared to the Proposed Action. This disturbance would be reclaimed. Impacts from long-term surface disturbance that would not be reclaimed would be similar to those described under the Proposed Action.

4.17.8 Modified County Road Re-Route Alternative (Alternative 6)

The impacts associated with the construction, operation, and maintenance of this alternative would be similar in type, intensity and duration as those described for the Proposed Action, except that under this alternative, the modified county road re-route would be approximately 1 mile longer than the Proposed Action county road re-route. Overall, this alternative could result in 1 less acre of long-term disturbance compared to the Proposed Action.

4.17.9 Western Tailings Storage Facility Alternative (Alternative 7)

The impacts associated with the construction, operation, and maintenance of this alternative would be similar in type, intensity and duration to those described for the Proposed Action, except it would result in fewer acres of disturbance. Relative to the Proposed Action, the fenced area would be smaller, resulting in 1,708 acres fewer acres of short-term impact due to restricted access. This alternative would result in approximately 38 fewer acres of long-term surface disturbance that would not be reclaimed compared to the Proposed Action.

4.17.10 No Action Alternative (Alternative 8)

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no associated project-related impacts to recreational resources excluding those impacts that are the result of actions previously approved under the Midway Gold Pan Project Exploration Amendment Preliminary Environmental Assessment (BLM 2012j). Impacts related to increased noise and access restrictions would not persist following reclamation of the areas affected by this approved action. Following reclamation, the intensity of the impact resulting from the disruption of this approved action would be reduced.

4.17.11 Preferred Alternative (Alternative 9)

Construction, operation, maintenance, and reclamation under this alternative would result in types, intensities, and duration of impacts similar to those described for the Proposed Action.

Construction of a power transmission line and maintenance road along the Southern Power Line Route would result in less surface disturbance compared to the Proposed Action. Several segments of existing roads that already support commercial truck traffic would make up part of the Northwest Main Access Route. Other segments of the route would be constructed or widened, resulting in additional disturbance. Gravel would be obtained from two 5-acre pits located along the route, resulting in additional disturbance. These areas would be reclaimed after completion of road construction. In comparison, use of the Proposed Action main access route, which was upgraded several years ago, and no new surface disturbance outside of the existing Green Springs or Easy Junior county road rights-of-way during road maintenance activities.

The Modified County Road Re-Route would be approximately 1 mile longer than the Proposed Action county road re-route. No road construction associated with the project would occur along the Modified County Road Re-Route, resulting in 7 fewer acres of surface disturbance compared to the Proposed Action. If, in the future, White Pine County decides to widen the Modified County Road Re-Route, 1 less acre of long-term disturbance would occur compared to the Proposed Action.

Construction of the more compact facility layout associated with the Western Tailings Storage Facility would result in less total surface disturbance compared to the Proposed Action TSF. The smaller facility footprint would require only 44 acres of stormwater controls that would not be reclaimed, compared to 82 acres under the Proposed Action. As a result, 38 fewer acres of long-term surface disturbance that would not be reclaimed would occur.

In summary, under this alternative, 45 fewer acres of surface disturbance would occur compared to the Proposed Action. Approximately 39 fewer acres of long-term surface disturbance that would not be reclaimed would occur, minimizing impacts to lands available for dispersed recreation.

4.17.12 Additional Monitoring and Mitigation

No additional monitoring is required. No mitigation measures are required.

4.18 SOCIOECONOMIC RESOURCES

4.18.1 Analysis Areas

The analysis area for socioeconomic resources is the same for all alternatives and includes portions of White Pine County (with a focus on the City of Ely, the unincorporated communities of

Ruth and McGill, the Ely Shoshone Reservation, and adjacent unincorporated portions of the county), Eureka County (with a focus on the unincorporated community of Eureka and the nearby 3rd Street/Devil's Gate area in Diamond Valley), and the Duckwater Shoshone Reservation (including the community of Duckwater).

The analysis area was selected because it includes locations where employees would live and work, in other words, areas where housing or land is available and that are within a reasonable daily commuting distance of the proposed mine site as shown in Table 4.18-1, where the major project-related tax revenues would accrue, and where the majority of project-related commercial transactions would occur.

4.18.2 Indicators

Indicators used to assess potential impacts to socioeconomic resources include the following:

- Employment, public revenue base, housing, and the demand for community services and schools
- Socioeconomic impact related to recreational use of the area

The social and economic characteristics of the analysis area were analyzed to determine the potential effects of the Proposed Action and the Alternatives on employment, population, income, housing, and services. Fiscal impacts were determined using information from Midway. Where possible, the economic and social effects of the Proposed Action and Alternatives were quantified. When quantification was not possible, the analysis includes a qualitative description of possible effects and potential issues.

Table 4.18-1 Communities In the Analysis Area: Population and Travel Distance to Proposed Mine Site

Location	Approximate Travel Distance to Proposed Mine Site (miles)	Population
White Pine County		
Ely	64	4,066
Ruth	60	418
McGill	76	1,175
Eureka County		
Eureka	40	717
Duckwater	21*-60	140

Notes:

* The travel distance from the community of Duckwater to the proposed mine site depends upon the route taken. In BCLLC/SDLLC's socioeconomic baseline report (2013), 21 miles reflected travel on Duckwater Road to the two-track BLM 4109A to the two-track portion of Easy Junior Road to the proposed mine, and 60 miles reflected travel on Duckwater Road to US 50 to the unpaved Easy Junior Road. For the Proposed Action, traffic on the two-track portion of Easy Junior Road south of the mine area would be directed onto the proposed county road re-route. This route would be approximately 12 miles long.

Sources: Blankenship et al. 2013

The economic impacts of constructing and operating the mine were estimated by leveraging the information contained in the Pan Project EIS, which utilized RIMS II Multipliers, to indirectly determine appropriate multipliers for the region. RIMS II multipliers are the sum of direct, indirect and induced effects divided by the direct impacts. These impact types are defined below:

Direct Impacts: The initial investment or spending within a geographic region is defined as the direct effect. During the construction phase, the direct effects include construction employment, and local spending for construction-related services, supplies and materials.

Indirect Impacts: The inter-industry impacts that measure the economic effects associated with the directly impacted industries selling and purchasing goods and services to and from other industries are the indirect impacts or effects. The indirect impacts associated with construction include industries located in the counties within the analysis area that support the construction activity such as engineering design and architectural services, wholesale and retail trade purchases.

Induced Impacts: The effects of increased consumer and household spending that result from the direct and indirect income changes are the induced impacts.

This analysis estimated the total economic impacts (direct, indirect, and induced) associated with construction and operation of the Proposed Action. The construction analysis included the impact of construction worker spending in the analysis area, as well as purchases of supplies and materials from local businesses during construction. The operations phase analysis was based on wages paid to mine employees. The effects that were measured for both phases of the project include employment (full-time and part-time jobs) and labor income (wages, salaries, and bonuses) paid to these workers. Information used in developing the estimates was provided by Midway.

4.18.3 Proposed Action (Alternative 1)

Economic Impacts

A number of studies report that each employment position in the mining industry in Nevada supports between 3.5 and 4.2 other jobs throughout the state economy (Dobra 2009, 2011). Under the Proposed Action, some portion of these positions, and their associated economic impacts, would be generated or supported within the analysis area as described in the Construction and Operations sections below; other positions would be generated or supported outside the analysis area. Because some portion of the employment positions generated or supported by construction and operation of the Proposed Action would be generated or supported outside the analysis area, they and their associated economic impacts are not described here. Therefore, the employment and associated economic impacts presented in this section are conservative, in that additional employment and economic impacts would be generated in addition to those described below.

Construction

Project construction would take approximately 1 year, depending on weather conditions, and would require an average of approximately 250 skilled and unskilled workers over the construction period; at its peak, the construction workforce would number approximately 300.

To the extent possible, the staffing for the construction phase would draw from the existing construction workforce in the analysis area; however, Midway expects that a large share of skilled trades (electricians, plumbers, heavy equipment operators) would be drawn from outside the analysis area, most likely from Elko but possibly from as far away as Las Vegas. These workers would be hired through trade groups and would stay in the analysis area for short periods in temporary housing.

General labor needed for the project would be supplied by the construction contractor and would include a combination of local residents and workers residing outside of the analysis area. Midway estimated that 20 percent of the construction labor force for the Pan Mine would be supplied locally with the remaining workers traveling from outside of the area. If these same ratios held for the Gold Rock Mine Project, approximately 50 construction laborers would be hired from the local area, with the remainder traveling from outside the area.

The number of construction workers hired locally for the Gold Rock Mine Project may be higher than that realized during construction of the Pan Mine depending upon the availability of labor from other mines in the area that may reduce their workforce in the future. Workers hired from outside the area would either relocate temporarily or stay in temporary housing in Ely, Ruth, McGill, Lund or Eureka; experience from the Pan Mine Project indicates that construction workers show a preference for staying in Eureka, although it is impossible to determine where Gold Rock Mine Project construction workers would stay. It is not anticipated that migrant construction workers would stay on the Duckwater Shoshone Reservation due to a lack of suitable housing on the Reservation.

The total cost of construction for the Proposed Action is estimated to be between $270 and $300 million, or approximately three times the approximately $100 million construction cost for the Pan mine; accordingly, the amount spent locally for the Proposed Action on material/equipment and labor would also be greater. It is estimated that the labor costs associated with construction of the Proposed Action would range from $50 to $55 million. Assuming that 40 percent of this amount is spent in the analysis area, approximately $20 to $22 million would be spent locally during construction, which would create up to 253 full- and part-time jobs in the local economy, and would generate up to $14 million in income for area residents.

In addition, up to $17 million may be spent locally for material and equipment; this would support up to 77 full- and part-time jobs in the local economy, and would generate up to approximately $4 million in income for area residents. The top industries benefitting from the increased employment and spending would be construction, retail trade, food services, drinking establishments, and accommodations. Businesses and local governments would also realize beneficial, short-term impacts. Businesses would benefit from purchases made by construction workers, and material and equipment purchases made by Midway. Local governments would realize increased tax revenues generated from this spending. These beneficial, short-term impacts would not be significant, however, as they would represent a continuation of the beneficial impacts realized from construction of the Pan Mine.

Operations

The operations phase (active mining and milling period) would run for approximately 10 years. During this phase 150 to 250 full-time employees would be required annually. Total annual payroll during operations is projected to range from $11.5 to $19 million and includes benefits and incentive pay in addition to wages and salaries. Hiring for operations would run concurrent with construction.

Midway would begin hiring and training workers for operations at the onset of construction and would expect to be fully staffed when construction is complete. Midway would target as many employees as possible from the analysis area and expects to fill all unskilled trades with people already living in the area. Some number of workers could be hired from residents of the Duckwater Shoshone Tribe living on the Duckwater Shoshone Reservation. However, the low unemployment rate in Eureka and White Pine counties combined with the area's small population base would require Midway to recruit some workers from outside of the analysis area. While a number of

factors would influence the percentage of the operations workforce hired from within the analysis area, this analysis assumes that the 52 percent local-hire target stated for the Pan Mine would also be met for the Proposed Action.

At full operation, Midway anticipates that 75 percent of mine employees (approximately 113 to 188 employees) would reside in White Pine County, Eureka County (primarily in Eureka) and on the Duckwater Shoshone Reservation. These employees would receive an estimated $8.1 to $13.2 million annually in wages and salaries. The remaining mine employees would live outside of the analysis area and would either commute to the job site on a daily basis or maintain a residence outside of the analysis area and stay in temporary housing during their shifts. Using the assumptions of where employees would reside (see Population-Related Social Impacts section below), the potential geographic distribution of employees and wages is shown in Table 4.18-2.

Table 4.18-2 Potential Geographic Distribution of Employees and Wages

Area	Potential Number of Employees Residing in Area	Direct Employment Wages/Salaries (millions)
Eureka County	23-38	$1.6 – $2.7
White Pine County	90-150	$6.5 – $10.8

The RIMS II model was used in the Pan Mine Project EIS to identify the direct, indirect and induced impacts on the analysis area during operations. Using the ratios shown in Table 4.16-2 of the Pan Mine Project EIS, it is estimated that the Gold Rock Mine Project Proposed Action operations would support or create 176 to 293 jobs in the local economy and generate between $12.1 and $20.1 million annually in labor income for residents in the analysis area. This includes 113 to 188 direct jobs held by residents of White Pine County, Eureka County, and the Duckwater Shoshone Reservation and 63 to 105 indirect and induced jobs in other businesses located in the analysis area.

Given the amenities and business structure in the analysis area, most of these indirect and induced jobs likely already exist and would be supported by the Proposed Action. The impacts on jobs and income are conservative estimates as they are based solely on the wages paid to workers who live in the analysis area. Although some of the wages paid to non-resident workers would likely be spent in the analysis area, the amount of that spending is unknown and was not included in the analysis.

Potential socioeconomic impacts could occur as a result of unanticipated incidents during operation of the mine, such as facility failure. If a mine facility such as the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Impacts to socioeconomic resources could occur through the loss of mine productivity due to reduction or interruption in operation.

Reclamation

Reclamation and post-closure monitoring would extend the life of the project to approximately 48 years. Active reclamation work would occur over a period of approximately three years from the cessation of mining and milling; passive work during the reclamation period (e.g., groundwater monitoring) would occur over a period of 30 years. Reclamation and post-closure employment would be substantially lower than during the active mining period (operations phase). The impacts to be realized during reclamation and post-closure have not been quantified due to the long timeframe prior to the start of this phase.

Recreation-Related Economic Impacts

The Ely District Approved Resource Management Plan (BLM 2008b) notes that "scenery is a draw to tourism and backcountry recreation, which has led to increased concerns over preserving visual resources." As presented in Section 3.16, most of the analysis area falls within VRM Class IV; this means that the visual appeal of the landscape is low; that the public sensitivity is low; that the landscape is distant from viewers; or some combination of one or more of these factors. Applicable planning documents do not define any scenic views or vistas in the analysis area.

As presented in Section 3.17, the area around the proposed mine site is available for dispersed recreation. Hunting is one of the most common recreational activities in the area. Because it is not possible to accurately quantify changes in the local deer herd population from the Proposed Action, the resulting specific economic effects are similarly difficult to accurately quantify. However, employing the general deer hunting-related economic assumptions from 2014, a range of socioeconomic impacts can be estimated based on potential incremental fluctuations in deer populations. For example, if it is assumed that the Proposed Action would adversely affect the deer herd to the extent that hunt tags in hunt units 131 through 134 would be reduced by 10 percent, and using the deer tag data and economic contribution calculations provided in Section 3.18, the effect on hunting expenditures would be a reduction of approximately $390,000, or 0.2 percent of 2014 statewide hunting expenditures. State and local tax revenues would be reduced by approximately $38,000 statewide. For each additional 10 percent increment in tag reduction, hunting-related expenditures and tax revenues would decline proportionally. For additional information on the potential effects of the Proposed Action on the deer herd, see Section 4.9, Wildlife and Fisheries Resources.

The Loneliest Highway SRMA is adjacent to US 50 and includes all BLM lands extending approximately four miles to either side of US 50; however, there are no recreation destinations or attractions within the portion of the SRMA in the vicinity of the proposed mine site.

As presented in Section 4.17, the sights and sounds of the proposed activities and mine facilities would be noticeable by some recreationists and could affect the overall scenic attractiveness for recreational users seeking a remote experience. However, while the recreation setting would be altered in portions of the analysis area, the proposed facilities would be compatible with BLM-approved management direction, and large areas of unaffected lands would remain available in the vicinity of the Proposed Action. In addition, as presented in Section 4.16, all project-related activities and features would be compliant with, or would conform to, the management objectives of VRM Class III and IV, and no impacts would be expected within the Loneliest Highway SRMA.

Therefore, because there are no scenic views or vistas defined in the area; because the Proposed Action would be compliant with, or would conform to, the management objectives of VRM Classes in the area; because the Proposed Action would be compatible with BLM-approved management direction; and because there are large areas of unaffected lands adjacent to the Proposed Action. Economic impacts to the sectors of the local economy that support tourism or recreational activities would be short-term during construction and during the long-term during the operations and reclamation phases.

Agriculture-Related Economic Impacts

Construction

Construction of the mine area fence would restrict access the active areas of the mine, and surface disturbance outside of that fence would impact grazing lands. As presented in Section 4.10.3 above and in Table 4.18-3 below, the maximum potential impact during construction due to restriction and

surface disturbance outside the mine area fence would be a temporary loss of 267 AUMs. Each AUM has been estimated to represent a direct economic impact of $41.28. Indirect and induced economic impacts to the industry, estimated at $33.69 per AUM, would occur as a result of providing goods and services to the livestock industry and include other industrial sectors such as crops, construction, manufacturing, transportation, communication, utilities, and trade and services. Induced impacts would include those caused by household consumption as a result of the direct and indirect impacts. A total economic impact of $74.97 per AUM is anticipated (Resource Concepts, Inc. 2001; values adjusted to 2016 using BLS CPI Inflation Calculator). The potential direct and indirect/induced economic impacts are presented in Table 4.18-3.

Table 4.18-3 Annual Economic Impacts of Lost Animal Unit Months

Allotment/Grazing Area or Pasture	AUMs Lost	Direct Economic Impact Lost, Eureka County	Direct Economic Impact Lost, White Pine County	Indirect/Induced Economic Impact Lost, Eureka and White Pine Counties
Newark/18 Mile House	< 1	$41.28	0	$33.69
South Pancake/West Pasture	<1	0	$41.28	$33.69
Duckwater/Bull Corner and Poison Patch	266	0	$10,980.48	$8,961.54
Duckwater/ Green Springs Valley	<1	0	$41.28	$33.69
Total	267	$41.28	$11,063.04	$9,062.61

Notes:
AUM = animal unit month
AUM data provided in Table 4.10-1

In Eureka County, livestock accounted for $6.774 million in value, and in White Pine County livestock accounted for $11.594 million in value (USDA 2014a). Production expenses for farms in Eureka County total approximately $23 million and approximately $21 million for farms in White Pine County (USDA 2014a). During construction very small dollar values would be lost compared to the large livestock values and production expenses in the agricultural economies of either county (Table 4.18-3).

Increased traffic on roads in the project area could result in an increase in livestock mortality due to vehicular collisions with livestock, resulting in a direct economic impact of loss of livestock revenue.

Operations

Impacts due to restricted access (fencing the mine area) and surface disturbance outside the mine area fence would continue throughout operations, resulting in a temporary loss of 267 AUMs during operations. A long-term loss of 458 acres of rangeland, accounting for approximately 16 AUMs, in the Bull Corner/Poison Patch Grazing Area of the Duckwater Allotment would result from the long-term disturbance that would not be reclaimed under the Proposed Action (pit expansion, process pond, stormwater control facilities, sediment basins, and proposed county road re-route) (Figure 2.3-15). In current terms, the direct economic impact of this long-term loss would be valued at $660.48 annually; the indirect and induced economic impact of this long-term loss would be $539.04 annually. Considering total losses each year for the next 13 years, present value of the total losses is approximately $13,612. Successful reclamation of the other mine facilities and potential increased forage productivity associated with the other mine facilities, may partially compensate for the long-term loss of the approximately 16 AUMs. Of that long-term loss, the 334-acre pit expansion would result in a permanent loss of approximately 11 AUMs in the Bull

Corner/Poison Patch Grazing Area. This permanent loss represents approximately 11 percent of all allotments that would be affected by the proposed project.

Similar to construction impacts, an increase in the number of vehicles in the project area during operations could result in an Increase in livestock mortality due to vehicular collisions with livestock, resulting in a direct economic impact of loss of livestock revenue.

Population-Related Social Impacts

Construction

As stated above, it is anticipated that 20 percent of the construction workforce would be hired from within the analysis area. The remaining 80 percent of the construction workforce would be drawn from outside the analysis area. While some number of the construction workforce may be hired by Midway and trained for operations jobs, the large majority of construction workers would be transient—that is, commuting to the jobsite, staying in temporary housing for some period of time, and then returning to their residences outside the analysis area when their work is complete. Some of the transient construction workforce (notably skilled tradespeople) would be in the analysis area for only very short periods of time (perhaps a few weeks); others would be expected to reside in the analysis area for 10 days during their work shift, and then return home for their 4 days off; and still others would remain in the analysis area for the duration of the construction period.

Given the short duration of the construction period and past experience, Midway does not expect that non-resident construction workers would relocate to the analysis area unless they are subsequently hired by Midway for operations. Thus, potential population-related impacts during the construction period are expected to short-term.

Operations

Mining operations would likely result in an increase in the population of the analysis area. The Proposed Action would require a total of 150 to 250 workers. To the extent possible, Midway would hire local residents to work at the mine; however, given the low unemployment rate in the analysis area and the skills required for operations positions, some of the operations-related workers would be hired from outside the analysis area and would relocate to White Pine or Eureka counties. The current expectation is that 52 percent of the operations employees would be drawn from the analysis area and 48 percent recruited from other communities.

The Pan Mine Project FEIS (BLM 2013c) anticipated that 35 of the 150 operations personnel would be relocated to the local area, and assumed that 15 existing residents of Eureka and 63 residents of other communities in the area would be hired to fill operations positions; this appears to have assumed that some number of the workers that would be displaced by a planned cessation of operations at the Ruby Hill Mine (due to a high wall failure in 2013) would be hired to work at the Pan mine. Although operations at the Ruby Hill Mine were reduced significantly in late 2013, the facility was not closed and in 2015, subsidiaries of Waterton Precious Metals Fund II Cayman, LP purchased the mine (Barrick 2015) and are considering options to resume mining under the current permit (Eureka County 2017).

Given the timing of the Gold Rock Mine Project (i.e., coming on line after the Pan Mine), a larger (but undetermined) number of workers are expected to relocate to the analysis area. Although the household characteristics of the operations and maintenance workforce that may relocate to the analysis area are not known, the prospect of long-term employment might attract some share of married workers who choose to relocate their spouses and children to the area. The possibility of work at the mine may also result in some population increase on the Duckwater Shoshone Reservation as tribal members relocate to the Reservation when mining jobs become available.

When the mine is fully operational, Midway expects that 75 percent of its employees (112-190 people) would reside in the analysis area and the remainder would commute from outside of the analysis area. This includes daily commuters (workers who live in communities outside of the analysis area and who travel to the mine each day) and weekly commuters (workers who maintain a residence outside the analysis area, live in temporary housing during the week, and return home at the end of their shift). The number of commuters may diminish over time depending on the availability of housing and other amenities in the area, and the employment levels at surrounding mining operations.

The average family size in the United States in 2010 was 3.14 people (Census Bureau 2010). Assuming that 25 percent of operations workers are commuters (the same percentage assumed in the Pan Mine Project EIS), and that the entirety of the remaining operations workers (113 to 190) relocate to the analysis area and bring families averaging 3.14 people each, the total direct effect on population would be an increase of approximately 355 to 597 people. It is expected that most of the relocating families would locate in either White Pine County (in Ely or an adjoining community) or the town of Eureka; however, some of the population increase could result from members of the Shoshone Tribe who are currently living elsewhere moving to the Duckwater Shoshone Reservation to take advantage of job opportunities presented by mining operations.

An increase in population of 355 to 597 people during the operations and maintenance phase of the Proposed Action would equate to a population increase of between approximately 4.7 and 7.9 percent. The impacts of this population growth would be long-term, and would be realized during the approximate 10-year active mining and milling period. Over the 10-year active mining and milling period, the population impacts would dissipate to the point where the increase in population would be subsumed and considered part of the existing environment, and thus there would be a less than significant impact to population.

The lower bound population estimate shown in Table 4.18-4 assumes that all relocating workers are single status (without other family members). The mid-range estimate assumes that half of all relocating workers are single status and half will bring families. The upper bound estimate assumes that all relocating workers will bring families. The average household size used to estimate the number of people in those relocating families was 3.14; the average family size in the United States based on the 2010 Census. This average family size estimate includes children, some of which would be school age.

Table 4.18-4 Relocating Workers Analysis

Scenario	Population Effects on Community of Eureka	Population Effects on Other Communities in Analysis Area	Total Population Effect in Analysis Area
Lower bound estimate	12-19	22-37	34-56
Mid-range estimate	25-39	46-77	70-116
Upper bound estimate	38-60	69-116	107-176

As shown in Table 4.18-5, the estimated change in population under all scenarios would range from 0.6 to 3 percent in Eureka and from 0.22 to 1.44 percent for other communities in the analysis area. Under the lower bound estimate, population in the analysis area would increase by a total of 34 to 56 people, none of which would be school age. Under the mid-range estimate, the total increase in population would be 71 to 116 people and 107 to 176 people under the upper bound scenario.

Some children under the mid-range and upper bound estimate scenarios would be of school age. Under the mid-range estimate, 19-32 children would relocate to the analysis area; under the upper bound estimate, 39-64 children would relocate to the analysis area.

Table 4.18-5 Estimated Population Change under the Proposed Action

Area	2010 Population	Lower-bound Effects		Mid-range Effects		Upper-bound Effects	
		New Population Estimate	% Increase	New Population Estimate	% Increase	New Population Estimate	% Increase
Eureka	1,987	1,999 - 2,006	0.6 -0.95	2,012- 2,026	1.26-1.96	2,025 - 2,047	1.91-3.0
Other Communities in the Analysis Area	10,186	10,208-10,223	0.22-0.36	10,232-10,263	0.45-0.76	10,255-10,302	0.68-1.14

Table 4.18-5 shows the percentage change from the 2010 population estimates for Eureka County and remaining communities as a whole. The higher upper bound estimate of 176 people relocating to the analysis area during the operations and maintenance phase of the Proposed Action would increase the total area population of the analysis area by 1.4 percent. Taken in isolation, the higher upper bound population effect on Eureka County would be slightly higher at 3.0 percent. Under the lower bound assumption, the population effects on any portion of the analysis area would be negligible.

Note that these population effects are related to direct employment positions only. Given the amenities and business structure in the analysis area, most of these indirect and induced jobs likely already exist and would be supported by the Proposed Action, rather than being created by the Proposed Action. Therefore, it is not expected that there will be any population increases associated with indirect or induced employment.

Housing

Construction

Based on construction workforce estimates and residency assumptions described above, up to 240 workers at the peak of construction may commute to jobs at the proposed mine. The majority of these would be transient, single-status workers who would require temporary housing during their stay. Temporary housing accommodations could include hotels, motels, recreational vehicles, mobile homes, or apartment rentals. Currently, the availability of all such resources in the analysis area is limited. During peak summer travel and during the work week, hotels, motels, and RV parks in the analysis area routinely report full or near full occupancy (Blankenship et al. 2013).

The number of transient workers that may be drawn to the analysis area during the construction phase could result in impacts and benefits to the housing market, as the Proposed Action does not include development of a man camp. Permanent residents of the area that rent could face short-term increased rental costs due to an increased demand for rental housing; conversely, owners of rental properties could see increased revenue from their properties. Local hotels and motels may realize improved and more-consistent revenue streams as some construction workers would know their schedules well in advance and could reserve rooms well into the future; these same hotels and motels may at the same time face the loss of custom from tourists and other visitors. Note that this loss of custom from tourists and other visitors may have indirect impacts elsewhere in the local economy, particularly in those sectors and on those businesses that rely on tourism.

It is difficult to forecast housing availability, as the magnitude of impacts to the housing market in the analysis area depends upon a variety of non-Project variables, including the employment levels at other mining projects in the analysis area and the actions taken by the private and public sectors to the acknowledged shortage of housing in the analysis area (i.e., construction of additional short-term lodging, opening of currently-closed lodging properties, increases in the number of rooms for rent in private houses, or continuing/expanding actions by the public sector to incentivize/motivate the development of new housing).

Housing on the Duckwater Shoshone Reservation would not likely be affected during construction due to a lack of available rental housing units on the Reservation.

Regardless of the magnitude or type of the impacts or benefits, all construction-related impacts and benefits would be temporary, ending in approximately 1 year when the construction phase is complete.

Operations

As presented above, up to 176 employees may relocate to the analysis area. Given the long-term nature of these positions, operations workers are likely to prefer conventional housing resources (e.g., single family homes, multifamily houses, or apartments) to temporary lodging (e.g., hotels, motels, recreational vehicles).

As presented in Section 3.18, there is an identified shortage of housing in White Pine County and Eureka County. A recent study identified a shortage of 137 units in White Pine County alone (White Pine County 2012b). In addition, temporary lodging such as hotels, motels, and RV parks in the analysis area routinely report being at full or near-full occupancy. The housing stock on the Duckwater Shoshone Reservation is sufficient to meet the needs of the Tribe's population; there were no vacant housing units on the Reservation as of September 2013, and only four vacant residential lots (Knight 2013).

The operations phase of the Proposed Action would result in an increased demand for housing in the analysis area, most likely in either Ely or Eureka. In late 2013 and early 2014, houses, townhomes, and land were listed for sale and units were available to rent in the area. However, it is impossible to know the suitability of the available housing units in relation to the needs of operations personnel, and to project how many suitable housing units would be available for purchase or rent at the time operations personnel are moving into the analysis area.

Housing on the Duckwater Shoshone Reservation is available and sufficient to meet the needs of tribal members living there. Given the location of the Reservation, its limited inventory of amenities, and its lack of available housing and residential lots, it is not anticipated that operations employees relocating to the analysis area would relocate to the Reservation unless they are members of the Shoshone Tribe who want to live on the Duckwater Shoshone Reservation. Any increased demand for housing would be addressed by the Tribe through available housing programs (Sanchez 2012).

The Proposed Action does not include development of a man camp. Given the number of operations personnel who may relocate to the analysis area, the availability of residential building lots in the analysis area, the current availability of housing units, and the reasonable expectation that the private sector would make more housing available in the analysis area in the near future to accommodate an increased demand, impacts to the housing resources in the analysis area would be moderate during operation of the Proposed Action. Impacts would likely be realized in the first few years after project sanctioning as operations personnel are hired and begin relocating

to the analysis area. The magnitude of impacts would be dependent to some extent on the status of other mining projects in the analysis area: the closing of a mine may result in more housing becoming available as workers leave the area (or, housing demand associated with the Proposed Action would be reduced if these workers are hired for the Proposed Action); conversely, impacts may be magnified if other projects commence construction or operations in the same or similar timeframe. Impacts may be further mitigated by construction of housing specifically for employees: the Project Proponent has purchased residential lots in Ely that could, if needed, be built-out to provide employee housing.

Community Services

Effects to community services are described in this section. Most community and public services (law enforcement and emergency response, fire protection, health and social services, water supply, solid waste, and education) would experience some increase in demand during either or both the construction and/or operation phases.

Impacts to community services are generally a function of population—increases in population usually result in increases in the demand for police and emergency services, increases in the need for social services, and increased demand for water and sewer and other public services. As discussed above, there is some uncertainty regarding from where the construction workforce would be sourced, and the number of construction workers that may be recruited from outside the analysis area: the potential shutdown of a mine in the area, for example, could provide a ready and local source of labor. If a greater number of workers are sourced locally, the number of transient workers in the analysis area during construction would be reduced, and this would serve to reduce impacts to community services.

Because of the uncertainties regarding the source of construction and operations personnel, the descriptions below are based on the assumptions presented in the Population section above, and thus conservatively account for potential impacts.

Law Enforcement

Construction

Increases in population generally result in increases in crime. The White Pine County Sheriff's Office reports that increases in disturbances, fights and domestic calls have been realized during large construction projects in the past (Swetich 2013). Additional traffic along US 50 during construction may entail additional demands on law enforcement in response to motor vehicle accidents or additional safety patrols. While the demands for law enforcement services in Eureka, Ely, and other locations where transient construction workers would stay may increase during the construction phase as a result of the increased population, this increased demand will be short-lived, lasting only during the approximately 1 year-long construction period. It is not anticipated that this increased demand would result in a significant impact to the provision of law enforcement services in the analysis area. Note that it is not anticipated that law enforcement services provided by the Duckwater Shoshone Reservation's Sheriff Department would increase during the construction phase, as no transient construction workers are anticipated to stay on the Reservation.

Operations

During operations, the increased permanent population in the analysis area resulting from the relocation of operations personnel and their associated family members, and the presence of operations personnel who would stay in the analysis area during their work shifts, could result in

a corresponding increase in the demand for law enforcement services. In addition, increased traffic on US 50 from Ely or Eureka to the mine site and on other roadways could require increased traffic enforcement and accident response from law enforcement agencies in both White Pine and Eureka counties. The increased demand for law enforcement services would not be expected to result in a significant impact to the provision of law enforcement services in the analysis area; impacts would be reduced/offset through the payment of state and local taxes by permanent operations personnel and the project proponent.

Fire Protection and Emergency Medical Services

Construction

Two types of incidents may result in impacts on fire and emergency medical services in the analysis area: frequent but low-magnitude events and infrequent but high-magnitude events (e.g., a large incident at the mine site). Low-magnitude events could result in greater impacts on local fire and emergency medical services due to their potential frequency; these impacts would be exacerbated because most local fire and emergency medical service providers are volunteers, and the distance from emergency providers to potential incident sites can be long, which could result in increased response times to non-mine worker related incidents. The impacts would be disproportionately felt by fire and emergency medical service providers in Eureka County, which, through a signed agreement between Eureka County and White Pine County, are the primary responders to the area around the mine site. The potential frequency of these events would be reduced through the use of vans and buses to transport workers from either or both Ely and Eureka to the mine site. This shuttle system would reduce the volume of new traffic on US 50, and consequently the incidence of accidents.

A large incident at the mine site or a major accident is an example of a high-magnitude event. These high-magnitude events occur infrequently. Construction activities would be conducted in conformance with all MSHA safety regulations and applicable state and local regulations. Fire protection equipment and a fire protection plan would be established in accordance with State Fire Marshal standards. A fire suppression water system (sprinkler system) would be installed to provide service to the buildings as required by National Fire Protection Association and applicable building codes. Emergency response vehicles and a trained mine rescue team would respond to fire and medical emergencies at the site. 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 separate radio frequency would be established for emergency use, and emergency response and communication protocols with local fire and ambulance services would be established should external assistance be required. These and other measures are noted in the Spill Contingency and Emergency Response Plan, which is included as Appendix I of the Plan (Midway 2013a). The implementation of these measures would ensure that high-magnitude events are also very low frequency events.

Operations

The impacts on fire protection and emergency medical services during the operations phase of the Proposed Action would be the same as, or less than, the impacts during the construction phase. Impacts during the operations phase would be lessened due to the smaller number of workers associated with the operations phase compared to the construction phase. These lessened impacts would be disproportionately realized over time by fire and emergency medical service providers in Eureka County, which, through a signed agreement between Eureka County and White Pine County, are the primary responders to the area around the mine site.

Health Care and Social Services

Construction

Health care and emergency services are available at the William Bee Ririe Hospital & Rural Health Clinic (which includes an out-patient clinic) in Ely, the Eureka Medical Clinic in Eureka, and a medical clinic on the Duckwater Shoshone Reservation. Transient construction workers are most likely to use the facilities in Ely and Eureka for minor emergencies and urgent care, while seeking service in their home communities for elective and routine care. It is not anticipated that the transient construction workforce would use medical services on the Duckwater Shoshone Reservation, as transient construction workers are not expected to reside on the Reservation.

Minor emergency services and urgent care needed by the construction workforce would be provided for at the mine site (a first-aid clinic and employees certified to provide emergency medical services would be available at the mine site), at the Eureka Medical Clinic, or at the William Bee Ririe Hospital & Rural Health Clinic. The project would operate in conformance with all MSHA safety regulations, and thus the need for minor emergency services and urgent care should be infrequent.

The availability of construction jobs could attract job seekers to the analysis area, some of whom may arrive with few resources. Social service providers in White Pine County and Eureka County could see an increase in indigent individuals seeking assistance during the construction phase. The workload of social services staff might increase during the construction period, resulting in diminished levels of service to the existing client base. These effects would likely diminish shortly after the construction period ends, as it is presumed that job seekers drawn to the analysis area would leave when construction positions are no longer available.

Impacts to the providers of medical and social services would be short-term, lasting generally only as long as the construction phase.

Operations

The projected increase in population would result in a proportional increase in demand for health care services in the analysis area. Mine employees would have health insurance which would reimburse care providers for the cost of services. In addition, relocated workers who purchase or rent property in White Pine County would contribute (directly or indirectly) to the support of health care infrastructure in the county through the Hospital District levy.

Given the relatively high wages anticipated for operations personnel, the operations phase of the Proposed Action is not expected to increase the caseloads of social service providers in the area, or increase the demand for social services in the analysis area.

Water and Solid Waste

Construction

There are no existing community water systems in the vicinity of the mine site. The mine would satisfy its water needs through wells located at the mine site. On May 27, 2015 Midway's water rights applications for a combined 1,523.97 afy were approved by the State of Nevada (NDWR 2015b).

During construction, Midway expects that workers would stay in existing developed housing (hotels, motels, private residences, trailers, and apartments) and RV parks, which have established water supplies. The water supply and wastewater treatment systems in Ely and

Eureka are both adequate to accommodate the existing population and foreseeable growth; therefore, a short-term increase in demand for water supplies and wastewater treatment during construction of the mine would occur.

As presented in Chapter 2, non-hazardous waste from the project would be placed in a Class III landfill constructed on-site that complies with NAC 444.731 through 444.747 or would be shipped off-site to a non-hazardous waste landfill – likely either the Whiskey Flats Landfill in Eureka County, or the Regional Landfill in White Pine County. Therefore, there would be impacts to local solid waste facilities during construction.

Operations

As presented in Chapter 3, the water supply and wastewater treatment systems in Eureka, Ely, and surrounding areas are sufficient to meet the current demands. Surplus capacity is available to meet the potential increased water and wastewater demands associated with a potential population increase. No additional water rights or public infrastructure would be needed to meet the potential increased demand. The water resources of the Duckwater Shoshone Reservation are adequate to serve existing needs of the Tribal population and to accommodate foreseeable growth. Few operations personnel are likely to relocate to the Reservation.

As presented in Chapter 2, non-hazardous waste from the project would be placed in a Class III landfill constructed on-site that complies with NAC 444.731 through 444.747 or would be shipped off-site to a non-hazardous waste landfill – likely the Whiskey Flats Landfill in Eureka County, or the Regional Landfill in White Pine County. Therefore, there would be impacts to local solid waste facilities during operations.

Education

Construction

Between 200 and 250 workers are expected to commute to the analysis area at the peak of construction. Given the short construction period, it is anticipated that the majority of these workers would be transient, maintaining permanent residences elsewhere and traveling without families; therefore, any increased enrollment is expected to be small. The White Pine County School District and the Eureka County School District schools that serve the analysis area have adequate capacity in existing facilities, and thus no new infrastructure is expected to be needed.

Operations

During operations, up to 176 employees may relocate to the analysis area. Assuming an average family size of 3.14, this would result in up to 201 children relocating to the area. Any children of the operations employees expected to be hired from the local labor pool are already enrolled in the local schools, or are included in the school districts' enrollment planning. Therefore, the hiring of these local employees would not result in a change in local school enrollment and would not impact local school districts.

As described in Section 3.18, the Eureka County School District and White Pine School District schools that serve the analysis area currently have sufficient capacity to accommodate this number of students. Operations workers relocating to the area would pay property, sales, and use taxes, some portion of which are used to fund school district operations and capital expenditure programs. Additionally, under the Nevada Plan, the State of Nevada may provide to the school districts additional funding on a per-student basis to offset the additional costs associated with the education of new students; in the 2014-2015 school year, the State provided $7,315 per student to the White Pine County School District.

Due to the number and size of active mines in Eureka County, local sources of revenue are sufficiently large so that no per-student basic support payments have been made to the Eureka County School District by the State in recent years. If additional students enroll in the Eureka County School District, and local sources of revenue decline, the State would provide to the Eureka County School District a per-student basic support payment. Therefore, the costs associated with the education of new students who relocate to the districts would be offset to some degree.

Fiscal Impacts

The estimates presented in this analysis are based on information provided by Midway for the nearby Pan Mine. Realized values described in this section would change over time as commodity prices fluctuate. However, the estimates are a reasonable assessment of the tax revenues that would flow from the project.

Sales Tax Receipts

The construction and the operation, maintenance, and abandonment phases of the mine would generate an increase in sales and use tax receipts. Purchases of equipment, supplies, and construction materials needed by the Proposed Action would be subject to sales tax as would consumer purchases by the construction and operations workforces.

Detailed estimates of the taxable purchases made in the analysis area by the construction and operations workforces cannot be quantified at this time. Taxable purchases would be greater during construction due to the larger workforce, but sales tax receipts would be more predictable during operations as a larger percentage of the workforce would be resident within the analysis area. On average, each household in Nevada has a disposable income of $34,313. During operations, the 190 households that may relocate to the analysis area represent approximately $6.5 million of disposal income annually. Assuming this is spent in the analysis area, the counties stand to reap a minimum of approximately $200,000 in sales tax receipts per year, depending on local and state tax rates. Sales tax receipts may be higher given the high average wage paid in the mining industry, and thus a higher likely disposable income per household associated with the project.

Midway estimated it would pay a total of $15.1 million in sales and use tax during construction and operation of the Pan mine; because of the larger capital and operating expenses associated with the Proposed Action, larger sales and use taxes would be generated. It is estimated that Midway could pay an approximate total of $60 million in sales and use tax during construction and operation of the Proposed Action. Some portion of this amount would accrue to White Pine County and Eureka County school districts located in those counties, and other taxing entities in each county. Midway would purchase goods and services from businesses located on the Duckwater Shoshone Reservation to the extent feasible.

Property Taxes

Property taxes paid by the project would be a function of capital investments in plant and equipment, and would accrue to taxing entities located in White Pine County. Based on then-current tax rates, general property tax revenues from the Pan Mine Project were estimated in the project's EIS at $9.8 million over the first eight years of operation. Given the larger capital investments associated with the Proposed Action, approximately $39 million in tax revenues may accrue to taxing entities located in White Pine County from the development of the Gold Rock Mine.

As presented above in the housing discussion, there is an expectation that the market would respond to increased demand for housing and other services. New third-party residential and commercial developments built to meet these increased demands during construction and operation would also contribute to the area's tax base. In addition, any housing developed by the Project Proponent would contribute to the area's tax base. However, projections of such revenues cannot be reasonably quantified due to uncertainties regarding housing type, values, and location of the developments.

Net Proceeds Taxes

Ad valorem taxes would be levied on the net proceeds of mining (NPM), which are a function of production, costs of recovery and processing, market prices and a variable tax rate. Projected NPM taxes over the life of the Pan mine were estimated in the EIS to range from $18.1 million (with an estimated $13.3 million accruing to White Pine County) to $28.9 million (with an estimated $21.2 million accruing to White Pine County); these estimates are based on specific commodity prices and would change with fluctuations in the price of gold. The currently-identified resource at the Gold Rock Mine Project is smaller than that of the Pan mine; therefore, lesser NPM tax revenues would accrue.

Payments in Lieu of Taxes

The proposed mine would be located on Federal land management by the BLM. Because there would be no transfer of federal land, there would be no effect on the amount of land used in estimating PILT for White Pine County; therefore, the Proposed Action would have no positive or negative impact on the PILT for White Pine County.

Increased Government Costs

The permanent population increases associated with operation of the project could result in increased government outlays to provide public services (fire and emergency services, solid waste, etc.). Over time, the additional costs would be balanced by additional revenues from property and sales taxes, among other revenue sources. In the period immediately after individuals relocate to the area, however, the jurisdictions may accrue short-term costs prior to additional revenues being generated; the magnitude of the increased costs borne by the jurisdictions in the area would be proportional to the number of people who relocate to each jurisdiction. Due to the uncertainty regarding where relocated individuals will choose to reside, the location or magnitude of these costs cannot be determined. However, the costs would be realized only in the short-term.

As noted above, through a signed agreement between Eureka County and White Pine County, fire and emergency medical services in Eureka County are the primary responders to the area around the mine site. Because the mine site is not located in Eureka County, the continued provision of such services would be unfunded through traditional means, and could represent a long-term increased cost for Eureka County's government if the county government does not identify and implement means to recoup these costs from either White Pine County or from those to who services have been provided.

Summary

In summary, construction of the mine would have a positive, short-term fiscal effect on the entities within the analysis area through an increase in sales tax receipts. The operation and maintenance of the mine would also have a long-term (approximately 10 years), positive fiscal effect through an increase in property tax revenues and net proceeds taxes. This positive, long term effect would

cease upon mine closure. The potential provision of housing by the proponent would serve to reduce housing-related impacts during the operations phase.

4.18.4 Other Alternatives (Alternatives 2 through 9)

With the exception of the No Action Alternative, the socioeconomic-related impacts of the alternatives would be functionally identical to those impacts identified above for the Proposed Action.

Under the No Action Alternative, the Proposed Project would not be developed and neither the potential positive nor negative socioeconomic impacts identified previously would be realized. The area would remain available for future mineral development, recreational use, or for other purposes as approved by the BLM. There would be no beneficial impacts from the Proposed Project to employment, income or tax revenues, and there would be no adverse impacts to county services or facilities.

4.18.5 Additional Monitoring and Mitigation

No additional monitoring is required. No mitigation measures are required.

4.19 ENVIRONMENTAL JUSTICE

This section presents an analysis of the potential environmental justice-related impacts associated with the construction and operation of the Proposed Action.

4.19.1 Analysis Areas

The analysis areas are the same areas used for socioeconomic resources (Section 4.18). The locations in the analysis area were selected for analysis as most of the construction and operations employees, as well as supporting industries, would be located in these areas. The Duckwater Shoshone Reservation was included as part of the analysis area as the community is within a reasonable commuting distance of the proposed mine site, and therefore a mine would provide a viable source of jobs for Duckwater Shoshone Reservation residents. Additionally, the analysis area includes the locales in which any potential impacts that have associated environmental justice concerns (e.g., air emissions, water supply and quality) would be realized. The Gold Rock Project Baseline Socioeconomic and Environmental Justice Conditions (Blankenship et al. 2013)) describes the distribution of minority and low-income populations in the analysis area.

4.19.2 Indicators

Indicators used to assess potential impacts to environmental justice communities include the following:

- Identification of minority or low-income populations affected disproportionately

The Proposed Action and Alternatives considered in this EIS were each analyzed for their potential to result in an adverse environmental justice-related impact. An alternative was considered to have an adverse impact on environmental justice if it would result in:

- Disproportionately high and adverse human health or environmental effects on minority populations or low-income populations;

- Increased risk or rate of exposure to an adverse environmental hazard by a minority population or low-income population that appreciably exceeds the risk or rate of exposure to the general population; or
- Health and safety hazards that disproportionately affect children.

The following factors were considered to determine whether the potential effects of an alternative are disproportionately high and adverse:

- Whether an impact would be likely on the natural or physical environment that significantly and adversely affects a minority population or low-income population; and
- Whether environmental effects would have a significant adverse impact on minority populations, low-income populations, or children that would appreciably exceed those on the general population.

Impacts relating to environmental justice were evaluated in terms of context; however, there is no standard set of criteria established for evaluating environmental justice impacts. The No Action Alternative would present no impacts to environmental justice; accordingly, the No Action Alternative was used as the basis of comparison for categorizing the potential impacts that could be realized from implementation of the other alternatives.

Impacts were analyzed in the context of the population residing within the analysis area, and in the context of the populations' use of the surrounding environment. Short-term and long-term impacts were analyzed.

4.19.3 Proposed Action (Alternative 1)

Potentially Disproportionately High and Adverse Human Health or Environmental Effects

The area within the immediate vicinity of the Project Area is sparsely inhabited; residents of several scattered ranches represent the nearest permanent population. The Census Block in which the proposed mine site is located is unpopulated, as are the adjoining Census Blocks.

Minority Populations

The Guidance for Federal Agencies on Key Terms in Executive Order 12898 (Appendix A to Environmental Justice: Guidance Under the National Environmental Policy Act, Council on Environmental Quality 1997) notes that minority populations should be identified where either "the minority population of the analysis area exceeds 50 percent" or where "the minority population percentage of the analysis area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis". As presented in Section 3.19, neither Eureka County nor White Pine County has a minority population that exceeds 50 percent of the total population. Additionally, the minority population percentage of both counties is not meaningfully greater than that of the State of Nevada as a whole.

The nearest population center to the Plan area is the town of Eureka, which is located approximately 28 air miles (approximately 50 road miles) northwest of the Plan area. As presented in Section 3.19, the minority population of the Eureka CDP does not constitute a majority of the population, and is not meaningfully greater than those of the counties of Eureka and White Pine as a whole. The next nearest population center is the City of Ely, which is located approximately 41 air miles (approximately 63 road miles) east of the Plan area. As presented in Section 3.19, the minority population of the City of Ely does not constitute a majority of the total population, and is not

meaningfully greater than those of the counties of Eureka and White Pine as a whole. Therefore, the populations of Eureka County, White Pine County, the Eureka CDP, and the City of Ely are not considered minority populations per the conditions specified in the Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses (EPA 1998b).

The Ely Shoshone Reservation is located on lands adjacent to the City of Ely; a majority of the population of the Ely Reservation (79 percent) identifies as American Indian and Alaska Native in whole or in part. The community of Duckwater is located on the Duckwater Shoshone Reservation, approximately 17 miles south of the Plan area; a majority of the population of the Duckwater Shoshone Reservation (78 percent) identifies as American Indian and Alaska Native in whole or in part. No traditional cultural properties or sacred sites have been identified within the project area or in area where they could be impacted by project activities. Additionally, no specific concerns about the Proposed Action have been raised by any of the Native American Tribes that were invited to enter into consultation. The area is known to be used by Native Americans for hunting; however, this use is not exclusive, nor is there an indication that Native American use of the area is conducted with more intensity than use by non-Native Americans.

As presented elsewhere in this EIS, all potential impacts to the natural and physical environment associated with or attributable to the Proposed Action would be less than significant or mitigated to a less than significant level. Further, these potential impacts would generally be localized to the Plan area, and the potential effects would diminish as a function of distance. Given that the area immediately around the Plan area is uninhabited, that the nearest identified concentration of a minority population is the community of Duckwater on the Duckwater Shoshone Reservation located approximately 17 miles south of the Plan area, that the Duckwater Shoshone Reservation is located generally upwind of the Plan area, and that the immediate vicinity of the Plan area is not known to be used intensively by Native Americans, construction and operations under the Proposed Action would result in no disproportionately high and adverse human health or environmental impacts to the populations of the Ely Reservation or Duckwater Shoshone Reservation. All potential impacts to the natural or physical environment associated with the Proposed Action would be borne by the populations of White Pine County and Eureka County approximately equally, without regard to race or ethnicity, and therefore no minority populations would realize any disproportionately high and adverse human health or environmental effects.

Low-Income Populations

As presented in Section 3.19, the percentage of the populations of Eureka County and White Pine County identified as low income is lower than those of the state of Nevada as a whole. Additionally, there are no identified concentrations of low income populations. The percentages of the populations of the Duckwater Shoshone Reservation and Ely Shoshone Reservation identified as low income are higher than those of Eureka and White Pine counties and the state.

As presented elsewhere in this EIS, all potential impacts to the natural and physical environment associated with or attributable to the Proposed Action would generally be localized to the Plan area, and the potential effects would diminish as a function of distance. Given that the area immediately around the Plan area is uninhabited, that the nearest identified low-income population is the community of Duckwater on the Duckwater Shoshone Reservation located approximately 17 miles south of the Plan area, that the Duckwater Shoshone Reservation is located generally upwind of the Plan area, and that the immediate vicinity of the Plan area is not known to be used intensively by Native Americans, construction and operations under the Proposed Action would result in no disproportionately high and adverse human health or environmental impacts to the populations of the Ely Shoshone Reservation or Duckwater Shoshone Reservation. All potential impacts to the natural or physical environment associated with the Proposed Action would be borne by the

populations of White Pine County and Eureka County approximately equally, without regard to poverty status, and therefore no low income populations would realize any disproportionately high and adverse human health or environmental effects.

Increased Risk or Rate of Exposure to an Adverse Environmental Hazard

The distance between the proposed mine site and areas with large minority populations (in particular the community of Duckwater on the Duckwater Shoshone Reservation) and the orientation of the proposed mine site and these areas (the proposed mine site is located downwind of the Duckwater Shoshone Reservation) would result in the dissipation or reduction of these potential impacts (e.g., impacts associated with the emission of air pollutants would diminish as the distance of the receptor from the proposed mine site increases). There are no identified practices or activities undertaken by Native Americans, other minority populations, or low-income populations that could result in an increased risk or rate of exposure to an adverse environmental hazard (for instance, reliance on harvested traditional or wild food sources). Therefore, there would be no impacts under these criteria.

Health and Safety Hazards that Disproportionately Affect Children

Construction and operation of the proposed mine site components of the Proposed Action would occur in an uninhabited area and within a fenced, secured area; children would not normally be found at the mine site, and if present, would be escorted and supervised by mine personnel. As presented above, all potential impacts to the natural or physical environment associated with the Proposed Action would be borne by the populations of White Pine County and Eureka County approximately equally. Therefore, the Proposed Action would not result in any health and safety hazards that would disproportionately affect children.

Proposed Action Impact Summary

As presented above, there would be no disproportionately high and adverse effect on an identified minority or low-income population; no minority or low-income population would have an increased risk or rate of exposure to an adverse environmental hazard; and construction and operation of the Proposed Action would present no health or safety hazard that would disproportionately affect children. Therefore, no environmental justice-related impacts are anticipated.

4.19.4 Other Alternatives (Alternatives 2 through 9)

The action alternatives presented in Chapter 2 describe a number of alternatives for the power line routes, the main access route, the county road re-route, and relocation of the tailings storage facility. These alternatives are all located in close physical proximity to the proposed routes or facilities contained in the Proposed Action, and would be constructed and operated in manners similar to those described for the Proposed Action. Because their physical location would be similar to those of the Proposed Action, and because the potential impacts would be approximately equivalent to or less than those of the Proposed Action, the environmental justice-related impacts associated with these alternatives would be approximately equal to, or less than, those described above for the Proposed Action.

As described in Chapter 2, the No Action Alternative would result in no new activities at the Project site. Therefore, the No Action Alternative would result in no impacts to the natural or human environment, and consequently would result in no environmental justice-related impacts.

4.19.5 Additional Monitoring and Mitigation

No additional monitoring is required. No mitigation measures are required.

4.20 HAZARDOUS MATERIALS AND WASTES

This section describes the potential impacts associated with hazardous materials and wastes under implementation of the Proposed Action and alternatives. Potential impacts associated with hazardous materials and wastes include exposure to hazardous materials in the event of a release or spill on roads located in Eureka County, primarily SR 278 and US 50.

4.20.1 Analysis Areas

The Proposed Action direct effects analysis area is shown on Figure 3.15-2 and includes:

- The Plan area and second water supply well and infrastructure;
- Proposed Action power line corridor;
- The main access route; and
- Potential transportation routes to the Plan area from the following major hubs from which materials would be transported:
    - From Eureka via US 50 (Lincoln Highway) east;
    - From Ely via US 50 west; or
    - From Elko via I-80 east or from Utah via I-80 west to US 93, and south on US 93 or US 93A and US 93, respectively, to Ely, west on US 50.

The Northern Power Line Route Alternative direct effects analysis area is the Proposed Action analysis area with one modification:

- Inclusion of the Northern Power Line Route Alternative corridor, instead of the Proposed Action power line route corridor.

The Southern Power Line Route Alternative direct effects analysis area is the Proposed Action analysis area with one modification:

- Inclusion of the Southern Power Line Route Alternative corridor, instead of the Proposed Action power line route corridor.

The Northwest Main Access Route Alternative, Northern Power Line Route direct effects analysis area is the Proposed Action analysis area with three modifications:

- Inclusion of the Northern power line route alternative, instead of the Proposed Action power line route;
- Inclusion of the Northwest Main Access Route; and
- Minimization of Gold Rock Mine-related use of the main access route.

The Northwest Main Access Route Alternative, Southern Power Line Route direct effects analysis area is the Proposed Action analysis area with three modifications:

- Inclusion of the Southern power line route alternative, instead of the Proposed Action power line route;
- Inclusion of the Northwest Main Access Route; and
- Minimization of Gold Rock Mine-related use of the main access route.

The Modified County Road Re-Route Alternative direct effects analysis area is the same as the Proposed Action analysis area.

The Western Tailings Storage Facility Alternative direct effects analysis area is the same as the Proposed Action analysis area.

The No Action Alternative direct effects analysis area occurs within the approved, amended 2011 Exploration Plan area.

4.20.2 Indicators

Indicators used to assess potential impacts associated with hazardous materials and wastes include the following:

- Hazardous materials inventory, SCERP, and other Applicant-Committed EPMs and controls to prevent or remediate releases or spills.

4.20.3 Proposed Action (Alternative 1)

Compared to current conditions, implementation of the Proposed Action would result in increased amounts of fuels and hazardous substances transported, stored and used within the analysis area, along with additional quantities of hazardous and non-hazardous wastes generated. During construction and operation, maintenance and reclamation of the Proposed Action, fuels, hazardous materials and wastes would be transported, stored, and used in accordance with federal, state, and local regulations.

Construction

Under the Proposed Action, bulk chemicals and supplies would typically be transported to the site by trucks via US 50 and the existing main access route (Figure 3.15-2) from either the east (Ely) or west (Eureka) and the major connecting highways including Interstate 80 (I-80), US 93, and SR 278 (Figure 3.15-2).

The primary fuels and reagents that would be transported to and used on the mine are listed in Table 2.3-4. Table 2.3-4 also describes the number of expected shipments for reagents to the site. Within the Plan area, most reagents tanks would be located outside of the process facilities. Table 2.3-4 presents the reagents that would be used, the volumes that would be stored on site, and the number of shipments anticipated per month.

The potential for hazardous materials 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 2013a).

During construction, the largest quantities of materials to be used are hydrocarbon fuels (diesel and gasoline) and lubrication oil. By necessity, much of the fuel and lubricants would be transported directly to the work sites on public roads in relatively small tankers (6,000 gallons or less for fuel). Fuel and reagent storage facilities would include secondary containment which

would hold 110 percent of the largest volume tank and if out of doors, additional capacity to hold the 100-year, 24-hour storm event.

The risk of a release would increase proportionate to the increased quantities of fuels, hazardous substances and wastes transported and stored within the analysis area, as well as proportional to the transport distances. Implementation of the management procedures and measures to prevent and contain releases as described in Sections 2.3.10, 2.3.14, 2.3.16, and 2.3.17 and compliance with regulatory requirements would minimize the likelihood of a spill or release and would facilitate quick response and remediation of inadvertent spills.

Inadvertent spills and releases of fuels and hazardous materials or wastes may occur. As described in Section 2.3.14, the existing SCERP outlines the procedures for handling and disposal of petroleum spills and wastes during construction activities, including spill or leak detection, spill response procedures (fuels and hazardous waste), spill cleanup procedures for on- and off-site incidents, and notification requirements. Compliance with the SCERP, applicable government regulations, and the Applicant-Committed EPMs outlined in Table 2.3-8 would substantially reduce spill incidence and the risk of adverse impacts on the environment or exposure of the public. With implementation of timely spill response procedures, adverse impacts associated with accidental spills are expected to be temporary.

Waste management procedures are described in Section 2.3.12. Wastes would be managed in compliance with state and federal regulations and recycled or disposed of in existing, permitted facilities. Midway would institute a waste management plan that would identify the wastes generated at the site and their appropriate means of disposal. Non-hazardous industrial solid waste would be recycled or disposed of on-site in the waivered Class III landfill that would be constructed as a trench within an active lift of the North WRDA. Sewage would be collected in portable sanitary facilities and removed by a contractor for off-site treatment and disposal at a permitted treatment facility. Midway anticipates that waste transport would occur monthly. With implementation of these management practices, environmental impacts associated with waste handling and transport would be similar to current conditions.

The mine is expected to be in the "large quantity generator" category as defined by the EPA (greater than 220 pounds or 100 kg per month). Used lubricants and solvents would be characterized according to the RCRA requirements and would be stored appropriately. Small quantities of hazardous waste would be stored according to state, federal, and local regulations. Trucks would transport small quantities of hazardous waste on an infrequent basis. Midway would use a licensed facility to ship wastes off site for disposal.

Ground disturbances during construction have the potential for the unanticipated discovery of contaminated media, particularly petroleum-contaminated soil (PCS). The PCS Management Plan (SRK 2013) addresses accidental spills or leaks of hydrocarbons, including diesel fuel and hydraulic or lubrication oil. In the event that PCS is encountered during construction, PCS would be collected and disposed of off site in accordance with federal, state, and local regulations.

Operations, Maintenance, and Reclamation

During operations, maintenance, and reclamation under the Proposed Action, the management practices for hazardous materials and wastes and direct and indirect effects associated with the use of fuels and hazardous substances and generation of wastes would be the same as those described for construction. Process chemicals and fuel would be transported by truck along the highways in the region, and the existing main access route as shown on Figure 3.15-2. Trucks would transport small quantities of hazardous waste on an infrequent basis. Transporters would

comply with all applicable state and federal regulations governing the transportation of hazardous materials and waste. Cyanide would arrive at the site as solid briquettes or liquid in NDOT-approved tote bins or tanker trucks and off-loaded from the truck in the secure reagent area. Management of all operations utilizing cyanide would be in accordance with the BLM Nevada Cyanide Management Plan (BLM 1991). Impacts associated with the use of fuels and hazardous materials and generation and disposal of wastes would be similar to those described for construction.

Probability of a Release

The Proposed Action would require transport to the Plan area of the chemicals and quantities described in Table 2.3-4. Process chemicals, fuel, and waste materials could be accidentally released during transport to and from the Plan area.

The probability of a truck accident involving hazardous materials was analyzed using national accident statistics for truck shipments of hazardous materials (FMCSA 2001). Results are presented in Table 4.20-1. The primary emphasis in this analysis has been placed upon the release of liquid material that could pose an immediate human health hazard or an off-site contaminant hazard. The estimated deliveries of off-road diesel fuel, sodium cyanide, sodium hydroxide, and hydrochloric acid have therefore been included in this analysis, as the other chemicals that would be used in large quantities are solids, not liquids.

Table 4.20-1 Hazardous Material National Accident Rate per Mile

Hazardous Material Category	Hazmat Miles	Total Hazmat Accidents	Hazmat Accident Rate Accident/Mile
3 – Flammable & Combustible	2,778,000,000	1,379.02	4.96E-07
6.1 – Toxic	218,000,000	50.00	2.30E-07
8 – Corrosive	1,945,000,000	257.00	1.32E-07

Abbreviations:
hazmat = hazardous material
hazmat miles – number of miles over which hazardous material transported by truck.
Sources: FMCSA 2001

The probability of a truck accident that would result in the release of the selected hazardous materials was calculated using the national rate of releases per mile traveled. Two main travel route distances were assumed for this analysis:

- 164 miles for the Elko/Eureka route, and
- 63 miles for the Ely route.

The assumed life-of-mine truck deliveries are as follows: off-road diesel fuel – 3,528; and hydrochloric acid – 156. The release probability was calculated over a mine life of 10 years.

Table 4.20-2 shows the release probability information calculated for both travel routes. A majority of the chemicals would potentially be transported from Elko, based on the railroad hubs located in Elko, as well as the numerous active mines in the Elko area.

Table 4.20-2 Hazardous Material Probability of Transportation Release

Hazardous Material	Number of LOM Truck Deliveries	Loaded Truck Haul Distance per Trip	Accidents Per Mile[1]	Release Probability
Diesel Fuel (3)	3,528	164 Elko/Eureka	4.96E-07	0.22749
		63 Ely		0.10499
Sodium Cyanide (6.1)	600	164 Elko/Eureka	2.30E-07	0.01794
		63 Ely		0.00828
Sodium Hydroxide (8)	96	164 Elko/Eureka	1.32E-07	0.00165
		63Ely		0.00076
Hydrochloric Acid (8)	156	164 Elko/Eureka	1.32E-07	0.00268
		63 Ely		0.00124

Notes:
1 The rate is based upon the Hazardous Material Category of the Chemical shown in Table 4.20-1.

The analysis shows that the probability of a release for each chemical would be as follows: diesel fuel – probability of 227 in 1,000 for the Elko/Eureka route and 105 in 1,000 for the Ely route; sodium cyanide - probability of 18 in 1,000 for the Elko/Eureka route and 8 in 1,000 for the Ely route; sodium hydroxide - probability of 2 in 1,000 for the Elko/Eureka route and 1 in 1,000 for the Ely route; and hydrochloric acid – probability of 3 in 1,000 for the Elko/Eureka route and 1 in 1,000 for the Ely route. These results indicate a relatively high probability of an accidental release of diesel fuel, but a low probability of an accidental release of sodium cyanide, sodium hydroxide, and hydrochloric acid to the environment during the estimated life of the Proposed Action. National accident statistics for flammable and combustible materials (diesel fuel) indicate a higher incident of release per mile of travel than the other categories used in this analysis. Based upon the small quantities of hazardous waste that would be generated by the Proposed Action, an accident resulting in a release to the environment during off-site transport is not anticipated.

Effects of a Release

The environmental effects of a release would depend on the substance, quantity, timing, and location of the release. The potential for off-site releases during transportation is calculated for hazardous substances only and does not indicate a volume or location. The event could range from a minor oil spill contained within the Plan area, where cleanup equipment would be readily available, to a large fuel or chemical spill during transportation. Some of the chemicals could have immediate adverse effects on water quality and aquatic resources if a spill were to enter a flowing stream or wetland area. Considering the transport routes, the probability of a spill of these materials impacting a wetland or other waterway is possible, though not very likely.

Hydrochloric acid spills which occur on the ground or in water would have the potential to impact local populations of aquatic and terrestrial life through the oxidizing action which destroys plant and animal cells. An acid spill into a waterway would have the potential to migrate from the initial spill site. Timely response to spills and subsequent cleanup actions would minimize the potential for long-term damage to the environment.

A release of diesel fuel to the ground surface would have the potential to impact vegetation and could ignite, causing a range fire. A spill into a waterway would cause contamination of water and soil, likely affecting local aquatic populations. Compliance with the SCERP, applicable government regulations, and the Applicant-Committed EPMs outlined in Table 2.3-8 would substantially reduce spill incidence and the risk of adverse impacts on the environment or exposure of the public. With implementation of timely spill response procedures, adverse impacts associated with inadvertent fuel spills are expected to be temporary.

Public Safety

The Proposed Action would operate in conformance with all MSHA safety regulations (30 CFR Parts 1-199). Site access would be restricted to employees and authorized visitors. Public access to the active mining areas would be restricted by a perimeter fence with a security gatehouse and locked gates or other physical control methods. Midway would restrict public access to existing roads that cross active mining areas in the Plan area in accordance with MSHA requirements. Public access would be controlled through the security gatehouse; a fence would be installed on the perimeter of the mine area with locked gates or other physical control methods.

Potential impacts to public health and safety would include health effects associated with noise, vehicle air emissions and fugitive dust associated with increased vehicular traffic, increased risk of traffic accidents on public roads, and exposure to inadvertent spills of fuels or chemicals. Impacts to public health and safety associated with the noise, vehicle air emissions, and fugitive dust are analyzed in Section 4.7, Air Quality.

Traffic control measures would be implemented to minimize impacts to public travel, including posting speed limit signs on the existing main access route and on other roads throughout the Plan area and enforcing speed limits. Impacts associated with project-related traffic are analyzed in Section 4.15, Land Use Authorizations and Access.

For public safety after the completion of active mining, closure of the pit would include construction of permanent barriers or berms, where constructible, outside of the anticipated pit wall ravel perimeter to limit public access to pit highwalls. In-pit haul roads would be blocked with rock or soil berms unless the BLM identifies a post-mining use for such roads and except as required temporarily to access monitoring points.

Impacts to public health and safety could arise from a large-scale release of fuels or chemicals. The location of the release would again be a primary factor in determining its importance. However, the probability of a large-scale release is low. In the event of a release during transport, 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. In the event of an accident involving hazardous substances, the carrier must notify local emergency response personnel as described in Section 3.20. The release of a reportable quantity of a hazardous substance must be reported to the appropriate state and federal agencies within the specified time frames. The SCERP Plan includes procedures for the response of mine resources to off-site transportation hazardous material releases if requested by an agency; however, Midway anticipates that local and regional agencies would maintain sole responsibility for response to incidents outside of the Plan area. Oil spills must be reported to the EPA National Response Center.

Compliance with the SCERP, applicable government regulations, and the Applicant-Committed EPMs outlined in Table 2.3-8 would substantially reduce the risk of a large-scale release and minimize the potential for exposure of the public. No adverse impacts to public safety are anticipated.

4.20.4 Northern Power Line Route Alternative (Alternative 2)

The management practices for hazardous materials and wastes for this alternative would be similar to those described for the Proposed Action. Although the Northern Power Line Route Alternative would have a different footprint, direct and indirect effects associated with the use of fuels and hazardous substances and generation of wastes would be the same as those described

for the Proposed Action. With implementation of the Applicant-Committed EPMs described in Table 2.3-8, an accident resulting in a release to the environment is not anticipated.

4.20.5 Southern Power Line Route Alternative (Alternative 3)

The management practices for hazardous materials and wastes for this alternative would be similar to those described for the Proposed Action. Although the Southern Power Line Route Alternative would have a different footprint, direct and indirect effects associated with the use of fuels and hazardous substances and generation of wastes would be similar to those described for the Proposed Action. With implementation of the Applicant-Committed EPMs described in Table 2.3-8, an accident resulting in a release to the environment is not anticipated.

4.20.6 Northwest Main Access Route Alternative, Northern Power Line Route (Alternative 4)

Under this alternative, bulk shipments of hazardous materials and wastes would travel a different route from the Plan area to US 50. Instead of using the existing main access route for commercial truck traffic and employees traveling from US 50, mine-bound commercial truck and employee traffic would be directed to follow the Northwest Main Access Route Alternative, Northern Power Line Route (Figure 2.4-2) to reach the Gold Rock Mine. As part of this alternative, existing segments of the selected route would be upgraded and proposed segments would be constructed to accommodate commercial trucks.

The management practices for hazardous materials and wastes for this alternative would be the same as those described for the Proposed Action. Although this alternative would have a different footprint than the Proposed Action, direct and indirect effects associated with the use of fuels and hazardous substances and generation of wastes would be similar to those described for the Proposed Action. With implementation of the Applicant-Committed EPMs described in Table 2.3-8, an accident resulting in a release to the environment is not anticipated.

4.20.7 Northwest Main Access Route Alternative, Southern Power Line Route (Alternative 5)

Under this alternative, bulk shipments of hazardous materials and wastes would travel a different route from the Plan area to US 50. Instead of using the existing main access route for commercial truck traffic and employees traveling from US 50, mine-bound commercial truck and employee traffic would be directed to follow the Northwest Main Access Route Alternative, Southern Power Line Route (Figure 2.4-2) to reach the Gold Rock Mine. As part of this alternative, existing segments of the selected route would be upgraded and proposed segments would be constructed to accommodate commercial trucks.

The management practices for hazardous materials and wastes for this alternative would be the same as those described for the Proposed Action. Although this alternative would have a different footprint than the Proposed Action, direct and indirect effects associated with the use of fuels and hazardous substances and generation of wastes would be similar to those described for the Proposed Action. With implementation of the Applicant-Committed EPMs described in Table 2.3-8, an accident resulting in a release to the environment is not anticipated.

4.20.8 Modified County Road Re-Route Alternative (Alternative 6)

Under this alternative, the county road re-route would have a different footprint; however, bulk chemicals and supplies would typically be transported to the site by trucks via the main access

route (Figure 3.15-2) as described for the Proposed Action. The management practices for hazardous materials and wastes and direct and indirect effects associated with the use of fuels and hazardous substances and generation of wastes would be the same as those described for the Proposed Action. With implementation of the Applicant-Committed EPMs described in Table 2.3-8, an accident resulting in a release to the environment is not anticipated.

4.20.9 Western Tailings Storage Facility Alternative (Alternative 7)

Relative to the Proposed Action, there would be approximately 118 fewer acres of short-term disturbance under this alternative. Although less acreage would be affected, construction, operations, maintenance and reclamation under this alternative would result in the same type and intensity of impacts as those described for the Proposed Action. The types of wastes managed and the applicable management practices applied for the Western Tailings Storage Facility Alternative would be similar to those described for the Proposed Action. The environmental impacts of these practices for this alternative would therefore be the same as those described the Proposed Action. With implementation of the Applicant-Committed EPMs described in Table 2.3-8, an accident resulting in a release to the environment is not anticipated.

4.20.10 No Action Alternative (Alternative 8)

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no associated project-related impacts associated with hazardous materials or wastes. Hazardous materials would continue to be used and wastes generated by exploration activities at rates similar to current conditions. The proposed project facilities would not being constructed or operated, and therefore, no additional hazardous materials would be used in the Plan area and no additional solid or hazardous wastes would be generated.

4.20.11 Preferred Alternative (Alternative 9)

Construction, operations, maintenance, and reclamation under this alternative would result in the same type and intensity of impacts as those described for the Proposed Action. The types of wastes managed and the applicable management practices applied for this alternative would be similar to those described for the Proposed Action. The environmental impacts of these practices for this alternative would therefore be the same as those described for the Proposed Action. With implementation of the Applicant-Committed EPMs described in Table 2.3-8, an accident resulting in a release to the environment is not anticipated.

Under this alternative, bulk shipments of hazardous materials and wastes would travel a different route from the Plan area to US 50. Instead of using the existing main access route for commercial truck traffic and employees traveling from US 50, mine-bound commercial truck and employee traffic would be directed to follow the Northwest Main Access Route that would follow the Southern Power Line Route (Figure 2.4-2) to reach the Gold Rock Mine. As part of this alternative, existing segments of the Northwest Main Access Route would be upgraded, and proposed segments would be constructed to accommodate commercial trucks.

Under this alternative, the county road re-route would have a different footprint; however, bulk chemicals and supplies would typically be transported to the site by trucks via the main access route (the Northwest Main Access Route that follows the Southern Power Line Route). The management practices for hazardous materials and wastes, direct and indirect effects associated with the use of fuels and hazardous substances, and generation of wastes would be the same as those described for the Proposed Action. With implementation of the Applicant-Committed EPMs described in Table 2.3-8, an accident resulting in a release to the environment is not anticipated.

The management practices for hazardous materials and wastes for this alternative would be the same as those described for the Proposed Action.

4.20.12 Additional Monitoring and Mitigation

No additional monitoring is required. No mitigation measures are required.

4.21 UNAVOIDABLE ADVERSE IMPACTS

Unavoidable impacts could occur by implementing any of the action alternatives. Some of these impacts would be short term, whereas others could be long term. These unavoidable impacts, which have been described earlier, could include those summarized in the following subsections.

4.21.1 Water Resources

Unavoidable impacts to water resources would be unlikely to occur as a result of surface disturbance associated with the Proposed Action. Water use would be limited relative to water availability. The implementation of Applicant-Committed EPMs in Table 2.3-8 would minimize potential degradation of surface water and groundwater quality.

4.21.2 Geology and Minerals

Local geologic and mineral resources would be unavoidably impacted through the excavation and removal, as anticipated by the 1872 Mining Law, of ore and waste rock and, to a lesser extent, by construction of support facilities under all alternatives except the No Action Alternative.

4.21.3 Paleontological Resources

Unavoidable impacts to paleontological resources may occur during excavation of the pit and topsoil stripping in the surface facilities area and would be long term. Excavation and curation of any significant fossils encountered during construction or operation under any of the action alternatives would decrease the potential for adverse impacts to scientifically significant paleontological resources, but cannot guarantee that all adverse impacts would be avoided.

4.21.4 Soils

Under the Proposed Action and Modified County Road Re-Route Alternative, approximately 3,946 acres of native soil conditions would be directly impacted during multiple phases of the project. Unavoidable adverse impacts would include destruction of natural soil structures and microbiotic crusts, microorganisms, and discontinuation of soil development. Implementation of reclamation (section 3.16) would replace soils as growth media for revegetation.

Under the Northern Power Line Route Alternative, unavoidable adverse impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in 33 fewer acres of disturbance.

Under the Southern Power Line Route Alternative, unavoidable adverse impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in 34 fewer acres of disturbance.

Under the Northwest Main Access Route Alternative, Northern Power Line Route, unavoidable adverse impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in 64 more acres of disturbance.

Under the Northwest Main Access Route Alternative, Southern Power Line Route, unavoidable adverse impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in 72 more acres of disturbance.

Under the Western Tailings Storage Facility Alternative, unavoidable adverse impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in 118 fewer acres of disturbance.

Under the Preferred Alternative, unavoidable adverse impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in 45 fewer acres of surface disturbance.

4.21.5 Prime and Unique Farmlands

Unavoidable adverse impacts under the Proposed Action, Modified County Road Re-Route Alternative, and Western Tailings Storage Facility Alternative would include approximately 3 acres of temporary disturbances to Prime Farmlands during construction of the proposed power line and associated maintenance road and during ongoing exploration activities.

Under the Northern and Southern power line route alternatives, unavoidable adverse impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in approximately 2 fewer acres of disturbance.

Under the Northwest Main Access Route Alternative, Northern and Southern power line routes and the Preferred Alternative, unavoidable adverse impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in up to approximately 12 more acres of disturbance.

4.21.6 Air Quality

Under all action alternatives, unavoidable adverse impacts to ambient air quality would include fugitive dust emissions from construction and operation and combustion gases from generators and vehicles. These emissions would be long term over the life of the project.

4.21.7 Vegetation Including Noxious and Non-Native, Invasive Weeds and Special Status Plants

Vegetation

Under all action alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative, long-term disturbance of existing vegetation communities would result in unavoidable adverse impacts of up to approximately 458 acres of vegetation. Long-term disturbance could create conditions favorable to erosion and the establishment of noxious weeds and other invasive, non-native species.

Under the Western Tailings Storage Facility Alternative and Preferred Alternative, long-term disturbance of existing vegetation communities would be similar to those under the other action alternatives, except that unavoidable adverse impacts would occur to approximately 38 fewer acres of vegetation.

Noxious and Non-Native, Invasive Weeds

Disturbance activities during the life of the project would create conditions favorable to the establishment of noxious and non-native, invasive weeds.

Special Status Plants

The establishment of noxious weeds could create unfavorable habitat conditions for any special status species in nearby, undisturbed habitat; however, no special status species were reported within the analysis area.

4.21.8 Wildlife Resources, Including Migratory Birds and Special Status Wildlife

Implementation of any of the action alternatives would permanently impact wildlife habitat in the project area. Under all of the action alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative, approximately 458 acres of wildlife habitat would not be reclaimed, including the 334-acre pit expansion, 13-acre ET cell, 82 acres of stormwater controls and sediment basins, and up to 29 acres associated with the proposed county road re-route. This disturbance that would not be reclaimed would result in a long-term impact. The 334 acres disturbed during expansion of the pit would be permanently lost, as bare rock would be exposed. The remaining 124 acres that would not be reclaimed would revegetate through natural processes. However, this change, and in some cases loss, of habitat would be small compared to the available undisturbed wildlife habitat in the project area.

Under the Western Tailings Storage Facility Alternative and Preferred Alternative, unavoidable adverse impacts would be similar to those under other alternatives except that 38 fewer acres of long-term surface disturbance that would not be reclaimed would occur under this alternative.

Some short-term unavoidable adverse effects on wildlife populations would potentially occur as a result of mortalities during construction and operation activities. No direct take of federally threatened or endangered species or their habitat is anticipated under any of the action alternatives.

4.21.9 Range Resources

Implementation of any of the action alternatives would result in a loss of rangeland available to livestock for grazing. Reclamation of disturbed land can result in poorer vegetation productivity than the native rangeland. In areas that are already degraded by noxious and invasive, non-native weeds, seeding efforts completed for disturbed areas could result in improved forage values.

4.21.10 Forest Products and Fuels

Unavoidable adverse impacts to forest products and fuels could occur due to long-term disturbance of existing forested areas (Table 4.11-1 and Table 4.11-2). Long-term disturbance could create conditions favorable to erosion and the establishment of noxious weeds and other invasive, non-native species which could impact the establishment of woodlands. Reestablishment of disturbed forest communities could take 75 to 100 years (Barney and Frischknecht 1974). Available fuels would be reduced, however this is not expected to be an overall adverse effect due to documented increased fuel load throughout portions of the Great Basin (Miller et al. 2001).

4.21.11 Wild Horses

Implementation of all of the action alternatives would result in unavoidable, short-term adverse direct effects to wild horse habitat as a result of the loss of access to available forage within the fenced mine area for the life of the mine. Under all action alternatives except the Western Tailings Storage Facility Alternative, an 8,757-acre fenced area would be lost from access. Under the Western Tailings Storage Facility Alternative, a 7,049-acre fenced area (1,708 acres smaller than the other alternatives) would be lost from access. Following removal of the fence and successful reclamation, most of the disturbance areas would be available for wild horses to resume grazing; however, reclamation of disturbed land can result in poorer vegetation productivity than the native rangeland. In areas already degraded by weeds, reclamation efforts could result in improved forage values following closure of the mine.

Unavoidable short-term, adverse indirect effects to wild horse habitat adjacent to the active mining areas and the main access road could include noise, vehicular traffic, and dust generated by the project-related vehicles and equipment, primarily during construction-related activities within the Plan area.

Under all alternatives except the Western Tailings Storage Facility and Preferred Alternative, surface disturbance that would not be reclaimed would result in a long-term impact to approximately 458 acres of horse habitat. Of the 458 acres of long-term disturbance that would not be reclaimed, expansion of the pit would result in 334 acres of permanent loss. Under the Western Tailings Storage Facility Alternative and Preferred Alternative, long-term disturbance that would not be reclaimed would occur on 38 fewer acres of horse habitat; permanent loss would be 334 acres, similar to the Proposed Action.

4.21.12 Cultural Resources

Unavoidable or residual adverse impacts to NRHP-eligible historic properties may include physical damage, loss of key features, loss of important cultural information, or loss of integrity for the resource or its historic setting. If a historic property cannot be avoided an approved treatment plan would be developed and implemented.

4.21.13 Native American Religious and Traditional Values

No unavoidable adverse impacts to Native American religious and traditional values have been identified for any of the action alternatives.

4.21.14 Land Use Authorization and Access

Unavoidable adverse impacts on land use, authorization, and access would include restricting public access for the life of the mine and any permanent or un-reclaimed disturbance areas created during mining activities. The project would result in unavoidable, short-term increased traffic on public roads with proportionate increase in risk of traffic accidents and accelerated road degradation.

4.21.15 Visual Resources

During construction and operation unavoidable adverse direct effects to visual resources on BLM-administered land would include visual intrusion of mine-related vehicles, equipment and personnel, and fugitive dust associated with disturbed areas. Mine-related components and

facilities would be visible from one or more KOPs during construction and operation of the project. The visibility of these components is unavoidable; however, the proposed project components would conform to the management objectives of VRM Class IV.

4.21.16 Recreation

The project would result in unavoidable, short-term and long-term adverse direct effects to recreational resources as a result of the displacement of the fenced portion of the Plan area for the life of the mine. Under all action alternatives except the Western Tailings Storage Facility Alternative, 8,757-acres would be fenced. Under the Western Tailings Storage Facility Alternative, 1,708 fewer acres would be fenced.

Unavoidable short-term, adverse indirect effects which could affect the quality of the recreational experience would include noise, vehicular traffic, and dust generated by the project-related vehicles and equipment, primarily during construction.

4.21.17 Socioeconomic Resources

During the construction phase, the analysis area would realize a short-term population increase due to the temporary in-migration of transient construction workers to the analysis area. This short-term increase in population may result in stresses to the local housing market, including increased rental rates and a reduction in the number of available rental properties in the analysis area. These impacts could be adverse to some individuals in the analysis area, and would be unavoidable. The temporary impacts caused by the small increase in population would cease following completion of construction. Potential increases in rental rates may occur.

The operations phase would not result in any adverse impacts on socioeconomic resources. The small increase in population would not be adverse, and the housing demands of the 35 operations personnel who would relocate to the analysis area could be met either by the market or by the Project Proponent (if the provision of housing is deemed necessary to attract and retain the desired workforce). The increased employment offered by the project would not be adverse, and the additional burden on public services would be accounted for through the payment of taxes (sales, property) or the payment of fees for service (water, sewer). Therefore, there would be no unavoidable adverse impacts as a result of the operations phase.

4.21.18 Environmental Justice

No unavoidable disproportionate adverse impacts on minority or low-income populations, or on children, have been identified for any of the action alternatives.

4.21.19 Hazardous Materials and Wastes

The unavoidable adverse impacts associated with the Proposed Action would be that wastes generated by the project would consume some capacity of the on-site Class III landfill and some capacities of off-site waste management facilities.

4.22 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irreversible and irretrievable commitments of resources could occur under any of the action alternatives. Irreversible and irretrievable resource commitments are related to the use of nonrenewable and renewable resources and the effects that the uses of these resources have on

future generations. The commitment of resources refers primarily to the use of nonrenewable resources such as fossil fuels, water, labor, and electricity. Renewable resources are included in this analysis due to their importance to the project region's natural resources. Irreversible effects primarily result from the use or loss of a specific resource that cannot be replaced within a reasonable time frame. Irreversible commitment of resources addresses the potential loss of future options for resource development or management, especially of nonrenewable resources such as minerals or cultural resources. These irreversible and irretrievable commitments of resources, which have been described earlier, are noted in the following subsections.

4.22.1 Water Resources

Groundwater uses during construction and operations of the project under all of the action alternatives would represent an irretrievable commitment of the resource for all action alternatives. No irreversible impacts are anticipated from the proposed project.

4.22.2 Geology and Minerals

Extraction and processing of ore from the Gold Rock pit as anticipated by the 1872 Mining Law would represent an irreversible and irretrievable commitment of mineral resources. The alteration of the overburden is irreversible. These impacts would be the same under all action alternatives.

4.22.3 Paleontological Resources

No paleontological resources have been identified in the analysis area, and low potential exists for meaningful paleontological resources in the analysis area; therefore, no irreversible or irretrievable commitments of paleontological resources would occur.

4.22.4 Soils

Permanent loss of soils within the pit would represent an irreversible commitment of soil resources. Soil resources would be irretrievably committed to reclamation during soil salvage and reclamation activities. Restoration of soil characteristics such as soil structures, infiltration, and water-holding capacity would gradually return through natural soil development processes.

4.22.5 Prime and Unique Farmlands

No irreversible and/or irretrievable commitments of Prime Farmlands would occur as a result of any of the action alternatives.

4.22.6 Air Quality

No irreversible and/or irretrievable commitments of air quality would occur as a result of any of the action alternatives.

4.22.7 Vegetation Including Noxious and Non-Native, Invasive Weeds and Special Status Plants

Vegetation

There would be an irretrievable commitment of vegetation resources during the life of the project; vegetation resources would return to reclaimed areas. Permanent disturbance from the mine facilities not subject to reclamation would constitute an irreversible commitment of those

vegetation resources. The 334-acre pit expansion would be a permanent loss under all alternatives.

Under all alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative, 458 acres of long-term disturbance would not be reclaimed. Although these areas would not be actively reclaimed, natural reclamation of vegetation species likely would occur over time, resulting in establishment of vegetation. Under the Western Tailings Storage Facility Alternative and Preferred Alternative, 38 fewer acres of long-term disturbance would not be reclaimed.

Noxious and Non-Native Invasive Weeds

Most vegetation resources disturbed during construction, operation, and closure would be reclaimed concurrently and following closure of the project. Long-term surface disturbance that would not be reclaimed would impact up to 458 acres of vegetation. Short-term and long-term disturbance activities would create conditions favorable to the establishment of noxious and non-native, invasive weeds.

Special Status Plant Species

No irreversible and/or irretrievable commitment of resources would occur due to the fact that no special status plants were identified in the analysis areas.

4.22.8 Wildlife Resources, Including Migratory Birds and Special Status Wildlife

Both protected and general wildlife species within the analysis area may be subject to irreversible and/or irretrievable commitment of resource with regard to the following types of disturbance: excessive noise; increased human disturbance, habitat loss and fragmentation; and increased roads and vehicle traffic, for the life of the project in disturbed areas and for the long-term in areas that will not be reclaimed.

4.22.9 Range Resources

The project would result in a long-term commitment of rangeland resources that would no longer be available to livestock. The 334-acre pit expansion would be a permanent loss under any of the action alternatives. Under all alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative, 458 acres of long-term disturbance would not be reclaimed. Although these areas would not be actively reclaimed, natural reclamation of vegetation species likely would occur over time, resulting in establishment of vegetation. Under the Western Tailings Storage Facility Alternative and Preferred Alternative, 38 fewer acres of long-term disturbance would not be reclaimed.

4.22.10 Forest Products and Fuels

An irretrievable commitment of forest product resources would occur during the life of the project (Table 4.11-1). Forestry products in areas that would not be reclaimed would be irretrievably committed as a result of the development of the mine.

Fuels resources in areas that would not be reclaimed following closure of the project (Table 4.11-2) represent irreversible and irretrievable commitments of fuel resources.

4.22.11 Wild Horses

The project would result in irreversible and irretrievable commitment of wild horse habitat that would not be subject to reclamation. Under all alternatives, the pit represents a permanent loss of 334 acres of wild horse habitat.

Under all alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative, 458 acres of long-term disturbance would not be reclaimed. Although these areas would not be actively reclaimed, natural reclamation of vegetation species likely would occur over time, resulting in establishment of vegetation. Under the Western Tailings Storage Facility Alternative and Preferred Alternative, 38 fewer acres of long-term disturbance would not be reclaimed.

4.22.12 Cultural Resources

Cultural resources are non-renewable resources, and any adverse effect would be permanent, i.e., irreversible and irretrievable. Mitigation of impacts by data recovery would also be an irreversible commitment of resources.

4.22.13 Native American Religious and Traditional Values

Any damage to or loss of Native American religious and traditional values would be an irreversible and irretrievable commitment of non-renewable resources.

4.22.14 Land Use Authorization and Access

The irreversible and irretrievable commitments under the Proposed Action would include a long-term loss of BLM land that would not be accessible to the public. Under all action alternatives the 334-acre pit expansion would be a permanent loss. Under all alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative, 458 acres of long-term disturbance would not be reclaimed. Although these areas would not be actively reclaimed, natural reclamation of vegetation species likely would occur over time, resulting in establishment of vegetation. Under the Western Tailings Storage Facility Alternative and Preferred Alternative, 38 fewer acres of long-term disturbance would not be reclaimed.

4.22.15 Visual Resources

The form, line, color, and texture elements created by the proposed mining pit that would remain open after reclamation of the proposed project would represent irreversible and irretrievable commitment of visual resources. However, the mining pit would not be visible from any of the KOPs based on the visual simulations. Reclamation of some project components, such as the waste rock disposal site and the heap leach pad would lessen the contrast these components would have, but not eliminate the contrast entirely.

4.22.16 Recreation

Irreversible and irretrievable commitments of recreation resources would not be expected as a result of any of the action alternatives.

4.22.17 Socioeconomic Resources

The social and economic structure of the communities in the analysis areas have, in large part, been formed as a result of cyclical increases and decreases in mining activities. Under all action

alternatives, there would be no irreversible or irretrievable impacts to the social and economic structure of White Pine and Eureka counties or the community of Duckwater.

4.22.18 Environmental Justice

There would be no irreversible and irretrievable commitments of resources for any of the project alternatives.

4.22.19 Hazardous Materials and Wastes

Non-hazardous industrial solid waste would be recycled or disposed of on-site in the waivered Class III landfill. Other wastes produced during construction and operation of the proposed facilities would be disposed of off site in existing permitted facilities and would permanently consume some of the waste storage capacity at those facilities.

4.23 RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

Short-term uses are those that generally occur on a year-to-year basis. Examples are wildlife use of forage, timber management, recreation, and uses of water resources. Long-term productivity is the capability of the land to provide resources, both market and non-market, for future generations. Short-term use and long-term productivity could occur under any of the action alternatives as noted in the following subsections.

4.23.1 Water Resources

Groundwater uses during construction and operations of the project under all of the action alternatives would not limit other uses of groundwater in the project area. The relationship of short-term uses and long-term productivity would be affected by the project.

4.23.2 Geology and Minerals

From construction through reclamation, geologic and mineral resources would be used over a period of 13 years, which is considered a short-term use. Long-term productivity of these resources would be directly affected by their removal; however, additional resources may be identified during mining which could facilitate long-term productivity of these resources.

4.23.3 Paleontological Resources

No meaningful, short-term uses of paleontological resources would occur under any of the action alternatives; therefore, no effects to long-term capability of geologic units to produce fossils would occur.

4.23.4 Soils

Short-term stockpiling of soils would enable the reclamation of disturbed areas, thereby minimizing adverse effects on long-term productivity under all of the action alternatives. Areas that would not be reclaimed would be eliminated from long-term productivity.

4.23.5 Prime and Unique Farmlands

Disturbance of Prime Farmlands would be affected during the life of the project. This disturbance would prohibit short-term use of these lands, but reclamation of the disturbance would restore

long-term productivity of these lands. Surface disturbance activities under the Proposed Action, Modified County Road Re-Route Alternative, and Western Tailings Storage Facility Alternative would result in approximately 3 acres of short-term disturbances to Prime Farmlands during construction of the proposed power line and associated maintenance road and during ongoing exploration activities.

Under the Northern and Southern power line route alternatives, short-term impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in approximately 2 fewer acres of disturbance.

Under the Northwest Main Access Route Alternative, Northern and Southern power line routes and the Preferred Alternative, short-term disturbances to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in up to approximately 12 more acres of disturbance.

4.23.6 Air Quality

Short-term disturbance from construction and operations under all action alternatives would result in emissions of fugitive dust and gases from mine equipment and vehicles. These emissions would not result in any impacts to short-term use and long-term productivity in the project area.

4.23.7 Vegetation Resources Including Noxious and Non-Native, Invasive Weeds and Special Status Plants

Vegetation

Disturbance and loss of vegetation until reclaimed would be considered long term for the majority of the activities under all action alternatives. Under all alternatives, the pit represents a permanent loss of 334 acres of vegetation. Under all alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative, 458 acres of long-term disturbance would not be reclaimed. Although these areas would not be actively reclaimed, natural reclamation of vegetation species likely would occur over time, resulting in establishment of vegetation. Under the Western Tailings Storage Facility Alternative and Preferred Alternative, 38 fewer acres of long-term disturbance would not be reclaimed.

Impacts to vegetation would initially occur as a result of construction activities; however, the long-term loss of vegetation associated with mining operations and later the non-reclaimed elements of the project would impact the long-term productivity of vegetation and the associated wildlife that would be displaced. Reclamation of disturbed areas would result in the conversion of the pinyon-juniper woodland community to grassland and shrub community types. Productivity could be reduced as a result of noxious weed establishment in previously-disturbed or reclaimed areas.

Noxious and Non-Native, Invasive Weeds

Short-term disturbance and loss of native vegetation would result from construction and mining activities; concurrent reclamation would be performed, leaving long-term disturbance. Establishment and spread of weeds resulting from the action alternatives may result in a loss of long-term productivity of vegetation.

Special Status Plants

No special status plants were identified in the analysis areas.

4.23.8 Wildlife Resources, Including Migratory Birds and Special Status Wildlife

Temporary disturbance and loss of habitat used by numerous species of wildlife could be considered short term if the habitats recover to pre-disturbed condition within 5 years of reclamation activities. The mine would be reclaimed with seed mixes containing native grass and shrub species wherever feasible to help promote recovery to grassland and shrubland ecotypes. Some habitats would take many years for natural re-growth to occur (e.g., pinyon-juniper woodland and sagebrush may not reach maturity for many years). When reclaiming impacted areas, Midway would include restoration objectives to meet Greater Sage-Grouse habitat needs to help promote long-term recovery of sagebrush habitat. Many impacts to wildlife resources would initially result from construction activities and be temporary in duration, but some would persist through mine operations and closure under all action alternatives.

4.23.9 Range Resources

Most impacts to range resources from all action alternatives would result from short-term mining activities, although long- term impacts from the project would persist until successful reclamation was achieved. Under all alternatives, the pit represents a permanent loss of 334 acres of forage resource. Under all alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative, 458 acres of long-term disturbance would not be reclaimed. Although these areas would not be actively reclaimed, natural reclamation of vegetation species likely would occur over time, resulting in establishment of forage resource. Under the Western Tailings Storage Facility Alternative and Preferred Alternative, 38 fewer acres of long-term disturbance would not be reclaimed. The impacts from mining disturbance not reclaimed would affect long-term productivity.

4.23.10 Forest Products and Fuels

Disturbance and loss of forest product resources until reclaimed would be considered long term impacts (Table 4.11-1 and Table 4.11-2). Construction activities and fencing of the active mine area would result in short-term impacts to forest products, including loss of the resource itself and loss of access to the resource. Disturbance associated with mining operations would result in long-term impacts to forest products, including loss of the resource and long-term productivity of forest community and the associated wildlife that would be displaced. Reclamation of disturbed areas would result in the conversion of the pinyon-juniper woodland community to grassland and shrub community types. Forest productivity could be reduced as a result of noxious weed establishment in previously-disturbed or reclaimed areas.

Long-term disturbance and loss of woodlands would result from construction and mining activities. The effects of this disturbance may have an initial beneficial effect on fuels due to the reduction of fuels and fire risk in the short-term.

4.23.11 Wild Horses

Most of the impacts to range resources available for wild horses would result from short-term mining and reclamation activities, including loss of access to forage due to mine area fencing. Some long-term impacts from the project would persist until successful reclamation was achieved. In the long term, there would be permanent loss of wild horse habitat in disturbance areas not subject to reclamation. Under all alternatives, the pit represents a permanent loss of 334 acres of forage resource. Under all alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative, 458 acres of long-term disturbance would not be reclaimed. Although

these areas would not be actively reclaimed, natural reclamation of vegetation species likely would occur over time, resulting in establishment of forage resource. Under the Western Tailings Storage Facility Alternative and Preferred Alternative, 38 fewer acres of long-term disturbance would not be reclaimed. The impacts from mining activities would not affect long-term productivity.

4.23.12 Cultural Resources

There would be no trade-off between short-term uses and long-term productivity for cultural resources. All direct adverse effects would be permanent.

4.23.13 Native American Religious and Traditional Values

There would be no trade-off between short-term uses and long-term productivity for Native American religious and traditional values. There is no measure of productivity for religious and traditional values. All direct adverse effects would be permanent.

4.23.14 Land Use Authorization and Access

Most of the impacts to BLM lands would result from short-term mining and reclamation activities; however, some of long-term impacts from the project would persist until the mine area fence was removed and the disturbed areas were successfully reclaimed. In the long term, there would be permanent loss of public access to the 334-acre pit under all action alternatives.

4.23.15 Visual Resources

There are no known short-term uses of visual resources that would adversely affect the maintenance and enhancement of long-term productivity.

4.23.16 Recreation

Most impacts on recreation resources would be for the life of the project, but impacts resulting from the visual disruption would persist beyond the life of the project. Reclamation measures would be applied to areas affected by the proposed project and would reduce the intensity of the impacts related to the visual disruption of the proposed project. The long-term productivity of the area of analysis to provide dispersed recreation opportunities would not be diminished.

4.23.17 Socioeconomic Resources

Under all action alternatives, short-term uses would involve labor and purchases of construction materials and services from local businesses. The analysis area is and has been an active mining district since the mid- to late-1800s, and the population of the analysis area is accustomed to the cycles of the mining industry. Because these uses would be temporary, they would not interfere with the long-term economic and social stability of the area.

4.23.18 Environmental Justice

Short-term uses (i.e., construction and operation of action alternatives) would not impact the long-term economic or social stability of minority or low-income populations in the analysis area. The analysis area is and has been an active mining district since the mid- to late-1800s, and the population of the analysis area is accustomed to the cycles of the mining industry. No impacts would occur under the No Action Alternative.

4.23.19 Hazardous Materials and Wastes

The use of hazardous materials and generation of solid and hazardous wastes in the construction of the action alternatives (short-term) would consume recycle or landfill capacity, but not significantly impact the productivity of off-site waste management facilities in the long-term.

CHAPTER 5
CUMULATIVE EFFECTS

5.1 INTRODUCTION

As required under NEPA and the regulations on implementing NEPA, this section analyzes potential cumulative impacts. A cumulative impact is defined as "the impact which results from the incremental impact of the action, decision, or project when added to other past, present, and reasonably foreseeable future actions (RFFAs), regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts include the impacts from past, present, and RFFAs combined with potential impacts from the Proposed Action. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 Code of Federal Regulations 1508.7). To evaluate cumulative effects in terms of the specific resource, ecosystem, and human community being impacted, a cumulative effects study area (CESA) is defined for each resource for which cumulative impacts may be anticipated.

Nevada BLM Instruction Memo NV-90-435 specifies that impacts must first be identified for the Proposed Action (for example, the Gold Rock Mine Project Proposed Action) before cumulative impacts with other actions can occur (BLM 1990). Environmental consequences of the Proposed Action and alternatives are described in Chapter 4. Because no direct or indirect impacts to paleontological resources, environmental justice or Native American Religious and Traditional Values associated with the Proposed Action were identified in Chapter 4, these resources are not addressed in the cumulative effects analysis. Based upon the analysis conducted for each resource, it was determined necessary to analyze cumulative impacts for the following resources:

- Water Resources
- Geology and Minerals
- Soils and Reclamation
- Prime and Unique Farmland
- Air quality
- Vegetation and Invasive, Non-native Plant Species, and Special Status Plant Species
- General Wildlife, Special Status Small Mammals and Fish, Big Game, Migratory Birds and Eagles and Greater Sage-Grouse
- Range Resources
- Forest Products and Fuels
- Wild Horses
- Cultural Resources
- Land Use Authorization and Access
- Visual Resources
- Recreation
- Socioeconomics
- Hazardous Materials and Waste

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

Step 1: Review and assess the BLM's Data Adequacy Standards that determine the level of evaluation necessary to analyze the potential effects of the Proposed Action;

Step 2: Establish appropriate geographic area CESAs for analysis by resource;

Step 3: Identify past, present, and RFFAs relevant to the resources in the CESAs.

The cumulative analysis focused on cumulative impacts of the Proposed Action and other actions both within and outside of the Proposed Action analysis areas. Information used in the cumulative impacts analysis was gathered from the following sources: the BLM's LR2000; the BLM's NEPA Registry; the Nevada Atlas and Gazetteer; the BLM website; the USFS website; GIS shape files and information provided by BLM, USFS, and Nevada Bureau of Mines and Geology; aerial photography; topographic maps; Eureka County; White Pine County; and various internet research results.

To determine the size of the CESAs for the Gold Rock Mine Project, each environmental resource was analyzed to determine the extent to which the environmental effect from the Proposed Action could be reasonably detected and then included the geographic areas of resources that could be affected. As a result, the sizes of the CESAs varied by resource. However, for simplicity, ease of cumulative effect analysis, and in an attempt to avoid having only slightly different CESAs for a number of resources, CESA boundaries were left identical for multiple resources where it seemed reasonable and conservative to do so. Table 5.1-1 outlines the CESAs, their size and the figures that describe their boundaries. Some resources are represented by the same CESA boundaries and thus are grouped together in tables and figures throughout Chapter 5. A map of the comprehensive CESA boundary (excluding socioeconomic, and hazardous materials and waste) is shown on Figure 5.1-1.

5.1.1 Time Frame for Analysis

The estimated conceptual timeline for the Gold Rock Mine Project is presented in Table 2.3-2 and includes 10 years of mining and concurrent reclamation, plus an additional three years of reclamation following the end of mining, for a total of 13 years. An average of 13 years was included in the estimated time frame for this cumulative impact analysis. For both the impact analysis in Chapter 4 and the cumulative effects analysis in this chapter, short-term effects were considered to occur within 13 or fewer years, and long-term effects were considered to occur for more than 13 years.

BLM

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BALD MOUNTAIN MINE

CASINO/WINROCK MINE

CROWNE POINT

White Pine County

BALD MOUNTAIN MINE NORTH OPERATIONS

ALLIGATOR MINE

BALD MOUNTAIN MINE SOUTH OPERATIONS

YANKEE MINE

DIAMOND

Eureka County

Lander County

CENTENNIAL EXPLORATION PROJECT

MOUNT HAMILTON, SELIGMAN, CENTENNIAL MINING PROJECT

ILLIPAH MINE

Eureka

RUBY HILL MINE

WHEELER RIDGE EXPLORATION PROJECT

50

McGill

WINDFALL PROJECT VENTURES

PAN MINE EXPLORATION

WINDFALL PROJECT

SILVERADO MINE

Ely

LOOKOUT MOUNTAIN

GREEN SPRINGS MINE

GIBELLINI MINE PROJECT

ROBINSON MINE

GREEN SPRINGS MINERAL EXPLORATION PROJECT

PAN PROJECT

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GOLD ROCK EXPLORATION PLAN

GRIFFON MINE EXPLORATION PROJECT

GRIFFON MINE

EASY JUNIOR MINE

COTTONWOOD CREEK GEOPHYSICAL EXPLORATION

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Nye County

NEKEKIM MINING PROJECT

6

MERCURY MOUNTAIN

SOUTHPAW/LOGAN PASS EXPLORATION PROJECT (50 ACRES)

TEMPIUTE TAILINGS DAM

* Centennial-Seligman Access Road Right-of-Way and Commercial Fuelwood Harvest Area

Lincoln County

ELY DISTRICT OFFICE

Legend

- City
- Past Mine
- Present Mine
- Reasonably Foreseeable Mine
- Oil & Gas Well
- Sand and Gravel Operation

Existing Power Lines

- El Dorado to Farm Area - Pan Powerline
- Falcon To Gondor Powerline
- On-Line Transmission Line
- Silver State Fiber Optic Line
- Other Powerline

Future Power Lines

- Strawberry 69kV Transmission Line
- Pan Mine Southwest Power Line Route
- Gold Rock Mine Plan Area Boundary
- Comprehensive CESA Boundary (Other than SocioEconomic and Hazardous Waste)
- Expanded Duckwater Shoshone Reservation (approximate boundary)

Land Ownership

- Bureau of Land Management
- Forest Service
- Bureau of Indian Affairs
- Department of Defense
- Private Ownership
- Railroads
- US Highway
- State Highway
- County Boundary

FIGURE 5.1-1
COMPREHENSIVE CESA BOUNDARY AND DISTURBANCE MAP

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 7/18/2017

0 23 46 Miles

N

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.

Basemap Source: ESRI World Shade Relief Map Service

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Table 5.1-1 Cumulative Effects Study Area by Resource

Resource	Cumulative Effects Study Area	Size of Area (acres)	Figure
• Water Resources • Soils and Reclamation • Prime and Unique Farmland • Vegetation and Invasive, Non-native Plant Species, and • Special Status Plant Species • Special Status Small Mammals and Fish • Forest Products and Fuels	• **Groundwater basin 154** (Newark Valley) **north approximately 15 miles** to US 50 • **Groundwater basin 173B** (Railroad Valley/Northern Part) **south approximately 15 miles** to the Duckwater Shoshone Reservation	483,967	5.5-1
• Geology and Minerals	• **Hydrographic sub-basin 154** (Newark Valley) **north approximately 15 miles** to US 50 • **Hydrographic sub-basin 173B** (Railroad Valley, Northern Part) **south approximately 15 miles** to the Duckwater Shoshone Reservation • Ruby Hill mine • Pan mine • Mount Hamilton mine • Proposed Gibellini mine	499,708	5.6-1
• Air quality	• 50 km grid centered on the Plan area	617,760	5.5-1
• Recreation, • General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds	• Hunt Unit 131	998,955	5.11-1
• Bighorn Sheep	• Hunt Units 131, 164	1,744,450	5.11-1
• Mule Deer	• Hunt Units 131, 132, 133, 134 (these four units make up Area 13), • Hunt Unit 108 in Area 10, north of US 50	4,262,792	5.11-1
• Elk	• Hunt Units 131, 132 • A portion of Hunt Unit 108 south of the Falcon to Gondor power line	2,205,883	5.11-1
• Pronghorn Antelope	• Hunts Units 131, 145, 163, and 164	2,816,033	5.11-1
• Migratory Birds and Eagles	• The Plan area plus: • the area within a 10-mile radius of the Plan area boundary • power line routes for the Proposed Action and alternatives	484,411	5.11-1
• Greater Sage-Grouse	Four NDOW Greater Sage-Grouse population management units: • Butte/Buck/White Pine • Diamond • Monitor • Quinn	1,727,788	5.11-1
• Range Resources	• Duckwater Allotment, • Monte Cristo Allotment, • South Pancake Allotment, • 18 Mile House grazing use area and South	969,208	5.12-1

Table 5.1-1 Cumulative Effects Study Area by Resource

Resource	Cumulative Effects Study Area	Size of Area (acres)	Figure
	Newark pasture area in the Newark allotment • Six-Mile Allotment		
• Cultural Resources	• The western edge of White Pine County from just south of the Elko County line • A small part of Eureka County in the Diamond Range • A small part of Nye County to the south consisting of the Duckwater Valley and adjacent portions of the Pancake Range and Railroad Valley	1,569,318	5.5-1
• Land Use Authorization and Access	• Hunt Unit 131 west of the Humboldt-Toiyabe National Forest Ely District • The Duckwater Shoshone Reservation	391,132	5.6-1
• Wild Horses	• Pancake HMA • Sand Springs West HMA • Monte Cristo Wild Horse Territory	1,097,208	5.5-1
• Visual Resources	• The viewshed from which a casual observer may distinguish elements of the Proposed Action and action alternatives from the background. • This CESA is the area where the proposed facilities may be viewed within a distance of approximately 15 miles as dictated by surface topography.	562,658	5.6-1
• Socioeconomics	• White Pine County • Eureka County • Duckwater Shoshone Reservation • Special emphasis on communities of Ely, Eureka, and Duckwater	8,371,898	5.6-1

• Hazardous Materials and Waste	• The Plan area and second water supply well and infrastructure
	• Corridors for the Proposed Action power line route and Northern and Southern power line route alternatives
	• The main access route
	• The northwestern main access route alternative
	• The Pan and Mount Hamilton mines
	• Potential transportation routes to the Plan area from the following major hubs from which materials would be transported:
	  ○ From Eureka via US 50 (Lincoln Highway) east;
	  ○ From Ely via US 50 west; or
	  ○ From Elko via I-80 east or from Utah via I-80 west to US 93 and south on US 93 or US 93A to US 93, respectively, to Ely, west on US 50.
		41,547	5.20-1

5.1.2 Past, Present, Reasonably Foreseeable Future Actions, Disturbances and Projects

Projects are defined for this FEIS as activities that could interact with the Proposed Action in a manner that would result in cumulative impacts. Projects have been grouped as past, present, and RFFAs. The projects are listed and described below. Surface disturbance was selected to describe the projects because it allows the combined surface disturbance impacts of all projects to be totaled. However, acres of disturbance are not applicable to socioeconomics and hazardous materials and waste impacts; therefore, impacts for those resources are only described qualitatively. Some of the projects are depicted in the Chapter 5 figures, as applicable. Table 5.2-1 identifies potential interactions among the projects and resources and quantifies surface disturbance in acres of each past, present, and RFFAs relevant to each resource CESA.

If a past action has been reclaimed, it has not been included in Table 5.2-1 as a disturbance. For roads, the acres of disturbance within each resource CESA is combined for each road type (i.e., U.S. Highways, State Routes, etc.). For mineral development and exploration, the acres of disturbance for each individual action are displayed on Table 5.2-1.

Major past and present land uses and disturbances in the region that are projected to continue into the future include: mineral development and exploration, utilities, infrastructure and public purpose, roads, wildfires, livestock grazing, agriculture, and mining. Dispersed recreation (including hunting, fishing, and OHV use) and residential development also occur in the region. Past, present, and RFFAs are described in sections 5.2 through 5.20.

5.2 PAST ACTIONS

5.2.1 Mineral Development and Exploration Past Actions

The acres of disturbance within each resource CESA for past mineral development and exploration are presented in Table 5.2-1. If a past action has been reclaimed, it has not been included in Table 5.2-1 as a disturbance. A brief summary of each mineral development and exploration past action is presented below.

Easy Junior Mine

Easy Junior is an inactive mine located approximately 65 miles west of Ely, Nevada. Past operators include Alta Gold and Echo Bay. Approximately 395 acres of disturbance exist within the Plan area. This disturbance represents approximately 10 percent of the proposed total disturbance under the Proposed Action. Most of this disturbance would be re-disturbed under the Proposed Action, and would be reclaimed in accordance with the facility that covers it. This site is located within Midway's approved Gold Rock Exploration Plan of Operations area.

Mount Hamilton Mine

The Mount Hamilton Mine is an inactive mine located approximately eight miles northeast of the Easy Junior Mine and operated by REA Gold Corp. There are approximately 365 acres of disturbance associated with this mine in the form of an open pit, haul and access roads, waste rock dumps, and areas with removed vegetation and disturbed soils and outcrop (USFS 2014a).

Green Springs Mine

Green Springs Mine is an inactive, reclaimed mine located approximately 16 miles northeast of Duckwater, Nevada. U.S. Minerals Exploration Company conducted mining operations, which

included excavating ore from three open pits. Approximately 115 acres of disturbance were permitted for mining operations (BLM 2013c). The three open pits remain, representing approximately 23 acres of existing disturbance (BLM 2013c; USFS 2014b). See Section 5.4.1 regarding planned exploration activities associated with the Green Springs Minerals Exploration Project.

Griffon Mine

The Griffon Mine property lies approximately 35 miles southwest of Ely, Nevada. The mining area contains disturbance from exploration and mining activities that began in the mid-1980s. The most significant development in the area occurred in the late 1990s when Griffon Mine operated for several years. The Forest Service reclaimed the heap leach pad, mill site, waste rock dumps and roads associated with the mine site (USFS 2012). Acreage of remaining disturbance from the Griffon Mine is approximated as 332 acres based upon GIS data provided by USFS (USFS 2013). Present exploration activities associated with Griffon Mine are described in this chapter under RFFA.

Illipah Mine

The Illipah Mine is inactive and is located approximately four miles north of Antelope Summit on US 50. Several companies have conducted exploration in the area of the mine over the last 10 years. Based on a review of aerial photography approximately 327 acres of unreclaimed disturbance are associated with the mine.

Mercury Mountain Mine

Mercury Mountain Mine is located in Nye County, Nevada. Fifty-nine acres of surface disturbance associated with this mine are within the pronghorn antelope CESA.

Pan Project Exploration

The Pan Project Exploration was a mineral exploration project located approximately 30 miles southeast of Eureka, Nevada. The exploration activities occurred on portions of the area now being developed as the Pan Mine throughout 1990, and were conducted by Alta Gold Co. Approximately 13 acres of disturbance is associated with the project (BLM 2013c). The permits for this project have now been closed and included in the Pan Mine Project.

Silverado Mill

The Silverado Mill is an inactive, unreclaimed mill site located approximately three miles north of US 50. Past operators include Einar C. Erickson and G and S Construction Inc. Based on a review of aerial photography, there are approximately 20 acres of unreclaimed disturbance associated with the site.

Tempiute Tailings Dam

Tempiute Tailings Dam is a water storage facility in Lincoln County, Nevada. There are approximately 38 acres of disturbance associated with the dam in the mule deer CESA.

Table 5.2-1 **Surface Disturbance in Acres of Past, Present, and Reasonably Foreseeable Future Actions for the Gold Rock Mine Project Cumulative Effects Study Area**

	Water Resources, Soils and Reclamation, Prime and Unique Farmland, Vegetation and Invasive, Non-Native Plant Species, Special Status Plants, Special Status Small Mammals and Fish, and Forest Products and Fuels	Geology and Minerals	Air Quality	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Sage-grouse	Migratory Birds and Eagles	Bighorn Sheep	Elk	Greater Sage Grouse	Mule Deer	Pronghorn Antelope	Range Resources	Wild Horses	Cultural Resources	Land Use Authorization and Access	Visual Resources
Surface Disturbance Acres															
Past Actions															
Mineral Development and Exploration Past Actions															
Easy Junior Mine	395	395	395	395	395	395	395	395	395	395	395	395	395	395	395
Mount Hamilton Mine	365	365	365	365	365	365	365	365	365	365	**	365	365	**	365
Green Springs Mine	23	23	23	23	23	23	23	23	23	23	1	23	23	1	23
Griffon Mine	**	**	170	332	**	332	332	332	332	332	**	**	332	**	**
Illipah Mine	**	**	**	**	**	**	327	327	327	**	**	**	327	**	**
Mercury Mountain	**	**	**	**	**	**	**	**	**	59	**	**	**	**	**
Pan Mine Exploration	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Silverado Mill	**	**	20	**	20	**	**	20	**	**	**	**	20	**	**
Tempiute Tailings Dam	**	**	**	**	**	**	**	**	38	**	**	**	**	**	**
Windfall Project Ventures	**	**	**	**	**	**	**	11	**	11	**	**	**	**	**
Sand and Gravel Operations (Past and Present Combined)	139	160	205	193	216	260	235	437	292	380	94	84	304	89	118
Oil, Gas, and Geothermal Development Past Actions															
Oil & Gas (1975 to 2000)	3	3	33	57	18	328	116	108	639	343	87	52	93	30	12
Utilities, Infrastructure and Public Purpose Past Actions															
Falcon To Gondor Power Line	**	36	**	50	**	50	87	314	173	112	-	**	210	**	**
ON- Line Transmission Line	**	**	**	589	**	589	1,088	633	1,350	589	-	**	104	**	**
El Dorado to Farm Area Power Line	53	42	164	112	135	112	112	177	112	177	15	177	177	112	**
Other Transmission Lines (USFS Land)	**	**	**	201	**	201	290	155	325	201	64	**	48	**	**
Railroads	**	243	**	502	**	502	1,205	91	3,645	596	**	**	31	**	**
Silver State Fiber Optic Line	18	58	88	213	94	213	211	265	244	265	80	148	179	92	**
City of Ely	**	**	**	315	**	315	315	**	315	315	**	**	**	**	**
Town of Eureka	**	192	**	**	**	**	**	**	**	279	**	**	**	**	**
Civa Airport	**	**	**	**	**	**	**	**	135	**	**	**	**	**	**
Moorman Ranch Airport	**	**	**	**	**	**	4	4	4	**	**	**	**	**	**
Placer Amex Landing Strip	**	**	**	**	**	**	**	**	16	**	**	**	16	**	**
Currant Ranch Airport	**	**	**	**	**	21	**	**	**	21	21	**	**	**	**
Duckwater Airport	**	**	**	**	**	7	**	**	**	7	7	7	7	**	**
Eureka County Landfill	**	11	**	**	**	**	**	**	**	**	**	**	**	**	**

Table 5.2-1 Surface Disturbance in Acres of Past, Present, and Reasonably Foreseeable Future Actions for the Gold Rock Mine Project Cumulative Effects Study Area

	Water Resources, Soils and Reclamation, Prime and Unique Farmland, Vegetation and Invasive, Non-Native Plant Species, Special Status Plants, Special Status Small Mammals and Fish, and Forest Products and Fuels	Geology and Minerals	Air Quality	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Sage-grouse	Migratory Birds and Eagles	Bighorn Sheep	Elk	Greater Sage Grouse	Mule Deer	Pronghorn Antelope	Range Resources	Wild Horses	Cultural Resources	Land Use Authorization and Access	Visual Resources
Mount Wheeler Machacek Substation	**	6	**	**	**	**	**	**	**	**	**	**	**	**	**
Roads Past Actions[2]															
U.S. Highways	55	85	244	733	260	985	981	903	1,435	1,408	316	208	514	237	357
State Routes	183	186	315	313	328	512	839	624	1,681	548	347	295	722	246	219
Local/County Roads	565	385	627	1,580	487	1,822	2,513	1,660	3,538	2,293	518	395	1,780	473	514
BLM Roads	3,531	3,811	4,175	8,151	3,907	14,167	16,212	13,594	31,384	20,342	8,288	8,336	11,794	4,107	3,166
USFS Roads	443	448	513	994	331	994	1,527	950	1,539	1,282	13	300	949	34	453
Other Roads	37	37	20	2	<1	39	2	38	2	79	<1	**	38	32	12
Recreation Past Actions															
Fairgrounds	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Eureka County Fairgrounds	**	122	**	**	**	**	**	**	**	**	**	**	**	**	**
Wildland Fires Past Actions															
Wildland Fire (1983)	**	**	**	**	**	**	10	317	421	**	**	**	858	**	**
Wildland Fire (1984)	**	**	**	**	**	**	1,029	**	32,356	**	**	**	**	**	**
Wildland Fire (1985)	**	**	**	**	**	**	111	**	1,648	**	**	**	1,315	**	**
Wildland Fire (1986)	**	**	**	**	**	**	2,399	4,875	2,399	**	**	**	4,875	**	**
Wildland Fire (1987)	**	**	**	**	**	**	**	9,231	**	**	**	**	**	**	**
Wildland Fire (1988)	**	**	**	**	**	**	**	**	99	**	**	**	**	**	**
Wildland Fire (1989)	**	**	**	**	**	**	**	**	-	**	**	**	185	**	**
Wildland Fire (1991)	**	**	**	**	**	**	**	**	1	**	**	**	**	**	**
Wildland Fire (1992)	**	**	**	**	**	**	**	202	**	**	**	**	202	**	**
Wildland Fire (1995)	**	**	**	**	**	**	**	**	1	**	**	**	1,663	**	**
Wildland Fire (1996)	**	**	**	**	**	**	2	**	2	**	**	**	**	**	**
Wildland Fire (1997)	**	**	**	**	**	**	**	**	-	**	**	**	**	**	**
Wildland Fire (1998)	**	**	**	**	**	**	11	**	11	**	**	**	**	**	**
Wildland Fire (1999)	**	**	**	**	**	**	**	-	-	**	**	**	**	**	**
Wildland Fire (2000)	**	**	**	1,601	**	1,601	428	1,606	1,876	1,601	**	**	1,831	**	**
Wildland Fire (2001)	**	**	**	1,672	**	1,672	1,778	1,778	4,693	1,672	**	**	4,815	**	**
Wildland Fire (2002)	**	**	**	**	**	**	**	**	1,013	**	**	**	59	**	**
Wildland Fire (2004)	**	**	**	**	**	**	**	**	5,830	95	**	**	1,551	**	**
Wildland Fire (2005)	**	**	**	**	**	**	631	**	952	**	**	**	**	**	**
Wildland Fire (2006)	**	**	**	193	**	193	10,018	193	23,513	193	**	**	**	**	**
Wildland Fire (2007)	577	577	577	577	368	577	577	577	853	577	**	2	577	**	577
Wildland Fire (2008)	**	**	**	**	**	**	**	**	1,116	**	**	**	**	**	**
Wildland Fire (2010)	**	**	**	**	**	**	**	**	54	17	**	**	**	**	**

Table 5.2-1 **Surface Disturbance in Acres of Past, Present, and Reasonably Foreseeable Future Actions for the Gold Rock Mine Project Cumulative Effects Study Area**

	Water Resources, Soils and Reclamation, Prime and Unique Farmland, Vegetation and Invasive, Non-Native Plant Species, Special Status Plants, Special Status Small Mammals and Fish, and Forest Products and Fuels	Geology and Minerals	Air Quality	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Sage-grouse	Migratory Birds and Eagles	Bighorn Sheep	Elk	Greater Sage Grouse	Mule Deer	Pronghorn Antelope	Range Resources	Wild Horses	Cultural Resources	Land Use Authorization and Access	Visual Resources
Wildland Fire (2011)	**	**	**	**	**	**	**	**	79	**	**	**	**	**	**
Wildland Fire (2012)	**	**	**	**	71	**	**	2,919	**	**	**	**	2,919	**	**
Wildland Fire (2013)	**	**	**	1,292	**	1,292	1,292	1,428	1,292	5,320	**	**	1,816	**	**
Past Actions Total Disturbance Acres	6,400	7,198	7,947	20,468	7,031	27,580	45,478	44,565	126,531	39,910	10,259	10,800	41,107	5,861	6,224
Present Actions															
Mineral Development and Exploration Present Actions															
Alligator Mine	**	**	**	**	**	**	**	296	580	**	**	**	580	**	**
Bald Mountain Mine	**	**	**	**	**	**	**	**	9,122	**	**	**	9,124	**	**
Casino/Winrock Mine	**	**	**	**	**	**	**	**	226	**	**	**	215	**	**
Centennial Exploration Project	2	2	2	2	2	2	2	2	2	2	**	2	2	**	2
Cottonwood Creek Geophysical Exploration	**	**	**	2,881	**	2,881	2,881	2,881	2,881	2,881	**	**	2,881	**	**
Crowne Point	**	**	**	**	**	**	**	**	265	**	**	**	265	**	**
Gold Rock Exploration Plan	267	267	267	267	267	267	267	267	267	267	267	267	267	267	267
Lookout Mountain	**	**	**	**	**	**	**	79	**	79	**	**	**	**	**
Robinson Mine	**	**	**	5,000	**	5,000	5,000	**	5,000	5,000	**	**	**	**	**
Ruby Hill Mine	**	1,386	**	**	**	**	**	**	**	1,386	**	**	**	**	**
Wheeler Ridge Exploration Project	75	75	75	75	75	75	75	75	75	75	**	61	75	**	75
Cathedral Canyon Exploration Project	5	**	**	5	5	5	5	5	**	5	5	5	5	5	**
Yankee Mine	**	**	**	**	**	**	**	354	354	**	**	**	354	**	**
Oil and Gas Development Present Actions															
Oil & Gas Wells (2001 to Present)	3	3	3	3	3	38	30	9	57	38	32	3	9	3	**
Urban Development Present Actions															
Eureka Canyon Subdivision	**	**	**	**	**	**	**	**	**	164	**	**	**	**	**
Present Actions Total Disturbance Acres	352	1,733	347	8,233	352	8,268	8,260	3,968	18,829	9,897	304	338	13,778	275	344
Reasonably Foreseeable Actions															
Mineral Development and Exploration Reasonably Foreseeable Actions															
Bald Mountain Mine North Operations	**	**	**	**	**	**	**	**	4,602	**	**	**	4,602	**	**

Table 5.2-1 Surface Disturbance in Acres of Past, Present, and Reasonably Foreseeable Future Actions for the Gold Rock Mine Project Cumulative Effects Study Area

	Water Resources, Soils and Reclamation, Prime and Unique Farmland, Vegetation and Invasive, Non-Native Plant Species, Special Status Plants, Special Status Small Mammals and Fish, and Forest Products and Fuels	Geology and Minerals	Air Quality	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Sage-grouse	Migratory Birds and Eagles	Bighorn Sheep	Elk	Greater Sage Grouse	Mule Deer	Pronghorn Antelope	Range Resources	Wild Horses	Cultural Resources	Land Use Authorization and Access	Visual Resources
Bald Mountain Mine South Operations	**	**	**	**	**	**	**	3,645	3,645	**	**	**	3,645	**	**
Gibellini Mine Project	**	650	**	**	**	**	**	**	**	730	**	**	730	**	**
Green Springs Mineral Exploration Project	75	75	75	75	75	75	75	75	75	75	**	75	75	**	75
Griffon Mine Exploration Project	4	4	4	4	**	4	4	4	4	4	**	**	4	**	4
Centennial-Seligman Mining and Exploration Project	195	195	195	195	195	195	195	195	195	195	**	195	195	**	195
Centennial-Seligman Access Road Right-of-Way Grant	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Nekekim Mining Project	**	**	**	**	**	50	**	**	**	50	**	50	**	**	**
Pan Project	3,301	3,301	3,301	3,301	3,301	3,301	3,301	3,301	3,301	3,301	3,301	3,301	3,301	3,301	3,301
Southpaw/ Logan Pass Exploration Project	**	**	**	**	**	**	**	**	50	**	**	**	**	**	**
Windfall Project	**	**	**	**	**	**	**	150	**	150	**	**	**	**	**
Utilities, Infrastructure and Public Purpose Reasonably Foreseeable Future Actions															
Strawberry 69kV Transmission Line	1	1	11	1	51	1	1	53	1	1	1	19	53	1	**
Mount Wheeler Power Pan Mine Southwest Power Line[1]	272	113	272	272	250	272	272	272	272	272	152	145	272	272	164
Eureka Landfill Expansion	**	80	**	**	**	**	**	**	**	**	**	**	**	**	**
Reasonably Foreseeable Future Actions Total Disturbance Acres	3,863	4,434	3,873	3,863	3,887	3,913	3,863	7,710	12,160	4,793	3,469	3,800	12,892	3,589	3,754
Past, Present, and Reasonably Foreseeable Future Actions Total	10,615	13,365	12,167	32,564	11,270	39,761	57,601	56,243	157,520	54,600	14,032	14,938	67,777	9,725	10,322

Notes:

1 For the Pan Mine South West Power Line Route, used GIS files for the alignment received from Midway on April 25, 2014. For the cumulative effects analysis, the third-party contractor applied a 60-foot-wide buffer (30 feet on each side of center line) to that alignment, and estimated that the project would involve approximately 272 acres. Using GIS, the third-party contractor identified the amount of the total area that would be within each CESA. Since that time, the route has been modified, and a Right-of-Way Grant has been issued for 252 acres (Trujillo 2014).

Windfall Ventures

Windfall ventures is a mineral exploration project located approximately five miles south of Eureka, Nevada conducted by American Selco, Inc. Approximately 15 acres of disturbance are associated with the exploration. Approximately 4.5 acres have been reclaimed (BLM 2013c).

White Pine Mine

The White Pine Mine is an inactive, reclaimed mine located approximately five miles north of the Barrick Bald Mountain North Operations boundary in portions of Sections 35 and 36, Township 25 North, Range 57 East (BLM 2009c), and five miles south of Ruby Lake National Wildlife Refuge in White Pine County. Approximately 67 acres of disturbance are associated with the mine (BLM 2013c). Approximately 67 acres have been reclaimed (BLM 2013c).

Jewell Project

The Jewell Project is a mineral exploration project located approximately five miles south of Eureka, Nevada and conducted by Barrick Mining Co. Approximately 12 acres of disturbance were associated with exploration activities. Approximately 12 acres have been reclaimed (BLM 2013c).

Gator Claims Exploration Drilling

Gator Claims Exploration Drilling is a mineral exploration project located in the southern portion of Alligator Ridge, approximately 10 miles south of Bald Mountain Mine conducted by Placer Dome US Inc. Approximately 19 acres of disturbance are associated with the exploration. Approximately 19 acres have been reclaimed (BLM 2013c).

Monte Exploration Project

The Monte Exploration Project is a mineral exploration project located approximately 25 miles southeast of Eureka, Nevada conducted by Alta Gold Co. Approximately 6.7 acres of disturbance are associated with the project. Approximately 6.7 acres have been reclaimed (BLM 2013c).

Gold Bar Mine and Gold Bar II Mine

The Gold Bar Mine and Gold Bar II Mine, described below, are within Eureka County, and are within the Socioeconomic CESA. These mines are not shown in Table 5.2-1 because acres of disturbance are not applicable to socioeconomic impacts; therefore, impacts are described qualitatively. These mines are described below to note the mineral development and exploration activities within the socioeconomic CESA. Projects within the socioeconomic CESA are described qualitatively in Section 5.17.

Gold Bar Mine

The Gold Bar Mine is an inactive mine located approximately 30 miles northwest of Eureka, Nevada and was operated by Atlas Gold Mining, Inc. Approximately, 1,175 acres of disturbance are associated with the mine, and approximately 200 acres have been reclaimed (BLM 2013c).

Gold Bar II Mine

The Gold Bar II Mine is an inactive mine located approximately 30 miles northwest of Eureka, Nevada. Gold Bar Mine II was operated by Atlas Gold Mining, Inc. Approximately 853 acres of disturbance are associated with the mine, and no reclamation activities have occurred (BLM 2013c).

Notices of Intent

There are many closed and expired NOIs within the CESA boundaries (BLM 2013c). Up to five acres of disturbance may occur under a NOI, though actual disturbance could be less in many cases. The BLM LR2000 record system indicated that NOIs for surface disturbance related to locatable minerals total approximately 2,172 acres Within the Egan Field Office (now known as the Bristlecone Field Office) and Mount Lewis Field Office administrative areas (BLM 2014c). NOIs were not included in Table 5.2-1 or on any of the CESA maps presented in this section.

Sand and Gravel Operations

There are numerous past permitted gravel pits within the CESA boundary that are closed and several that are currently active within the CESA boundary. Five acres of disturbance were assumed for each sand and gravel operation location where specific disturbance area data were not available. Past and present sand and gravel operations were totaled under past actions in Table 5.2-1.

5.2.2 Oil and Gas Development Past Actions

Table 5.2-1 displays the combined total acres for past action disturbance of oil and gas development. Disturbance associated with oil and gas development was calculated from known oil and gas fields within the CESA boundary between 1975 and 2000. Oil and gas fields dated prior to 1975 were considered reclaimed. Disturbance from oil and gas wells assumes 3 acres of disturbance for each well. Well locations are obtainable, however not displayed on the CESA figures presented in the section because disturbance associated with wells is minimal (NBMG 2011).

5.2.3 Utilities, Infrastructure and Public Purpose Past Actions

The acres of disturbance within each resource CESA for past utilities, infrastructure and public purpose are presented in Table 5.2-1 and larger projects are described below.

Falcon to Gondor Power Line

The Sierra Pacific Power Company Falcon to Gondor Transmission Project involved the construction of a 345 kV power line, generally located between Ely and Dunphy, Nevada. The power line was constructed in 2003, is approximately 180 miles long, and consists of steel H-frame towers (BLM 2001). The location of the Falcon to Gondor Power Line is shown on Figure 5.1-1, and the acreage of disturbance within each CESA is shown in Table 5.2-1.

Mount Wheeler Power Machacek Substation

The Mount Wheeler Power Machacek Substation is an existing 6.2-acre substation located approximately 0.5 mile northeast of the Ruby Hill Mine (BLM 2013c).

ON Line (One Nevada Transmission Line) Power Line

The joint NV Energy/Great Basin Transmission South, LLC ON Line Power Line is a built 500 kV transmission line project within the designated Southwest Intertie Project (SWIP) Utility Corridor approved South segment. The three-year construction project was completed on January 28, 2014 (The Ely Times 2014). Reclamation is in the final phases and development of a restoration monitoring plan is underway. The high-voltage line was formally dedicated in January 2014. The 235-mile transmission line extends between the newly constructed Robinson Summit substation at the northern terminus (approximately 18 miles northwest of Ely, Nevada) and the existing Harry Allen substation at the southern terminus (just north of Las Vegas). In addition, a loop-in of the

existing Falcon to Gonder 345 kV transmission line at Robinson Summit substation was constructed and new equipment installed at the existing Harry Allen substation near Las Vegas. The Robinson Summit substation was reported to require approximately 77 acres (BLM 2013c). Approximately 48 miles (1,164 acres) of the ON- Line Project falls within the special status species Greater Sage-Grouse CESA and approximately 45 miles (1,091 acres) of the ON- Line Project are within the land use and access, recreation and wilderness, and socioeconomic CESAs.

Other Utility Lines

The CESAs include several other utility lines including 230 kV power lines, 69 kV power lines, and fiber optic lines. The most current past actions are presented in Table 5.2-2.

Table 5.2-2 Other Utility Lines Past Actions (Direct Disturbance)

Name	CESA(s)	Miles	Acres
El Dorado to Farm Area –Transmission Line (69 kV, 30 ft. Right-of-Way)	Air Quality	12	177
	Bighorn Sheep	8	112
	Cultural Resources	12	177
	Elk	8	112
	Geology and Minerals	4	42
	Greater Sage Grouse	12	177
	Land Use Authorization and Access	8	112
	Migratory Bird	9	135
	Mule Deer	8	112
	Pronghorn Antelope	12	177
	Range Resources	1	15
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater Sage-Grouse	15	224
	Water Resources; Soils and Reclamation; Prime and Unique Farmland; Vegetation and Invasive, Non-Native Plant Species, and Special Status Plant Species; Special Status Small Mammals and Fish; Forest Products and Fuels	22	315
Falcon To Gondor Transmission Line (345 kV, 30 ft. Right-of-Way)	Air Quality	56	410
	Bighorn Sheep	7	50
	Cultural Resources	29	210
	Elk	24	87
	Geology and Minerals	3	36
	Greater Sage Grouse	43	314
	Mule Deer	24	173
	Pronghorn Antelope	15	112
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater Sage-Grouse	14	100
ON- Line Transmission Line (500 kV, 60 ft. Right-of-Way)	Air Quality	47	682
	Bighorn Sheep	40	589
	Cultural Resources	7	104
	Elk	75	1,088
	Greater Sage Grouse	44	633
	Mule Deer	93	1350
	Pronghorn Antelope	40	589
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater Sage-Grouse	81	1,178

Table 5.2-2 Other Utility Lines Past Actions (Direct Disturbance)

Name	CESA(s)	Miles	Acres
Other Transmission Lines (on USFS land, 30 ft. Right-of-Way)	Air Quality	44	318
	Bighorn Sheep	28	201
	Cultural Resources	7	48
	Elk	40	290
	Greater Sage Grouse	21	155
	Mule Deer	45	325
	Pronghorn Antelope	28	201
	Range Resources	9	64
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater Sage-Grouse	55	402
Silver State Fiber Optic Line (20 ft. Right-of-Way)	Air Quality	68	329
	Bighorn Sheep	54	213
	Cultural Resources	37	179
	Elk	50	211
	Geology and Minerals	7	58
	Greater Sage Grouse	55	265
	Land Use Authorization and Access	21	92
	Migratory Bird	19	94
	Mule Deer	58	244
	Pronghorn Antelope	64	265
	Range Resources	18	80
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater Sage-Grouse	109	426
	Water Resources; Soils and Reclamation; Prime and Unique Farmland; Vegetation and Invasive, Non-Native Plant Species, and Special Status Plant Species; Special Status Small Mammals and Fish; Forest Products and Fuels	24	121

Urban Development

The City of Ely and the Town of Eureka both fall within the CESA boundaries. The surface disturbance associated with the general development areas of the city and town are displayed in Table 5.2-1.

Table 5.2-1 displays the total acres for past action disturbance of Airports and Railroads. A brief description of airports and railroads follows below.

Airports

There are several small airports within the CESA including the Civa Airport, Currant Ranch Airport, Duckwater Airport, Moorman Ranch Airport, and Placer Amex Landing Strip. The Eureka Municipal Airport is located within the CESA and has a runway length of 7,300 feet (BLM 2013c). Approximately 341 acres of disturbance are within the air quality CESA, and 192 acres of disturbance are within the geology and minerals CESA.

Railroads

Railroad systems are present in the vicinity of Ely and Eureka. Rail also runs east to west through Nye and Lincoln counties. A 200-foot Right-of-Way was applied to each railroad for calculating surface disturbance. Past action disturbance acres for railroads are displayed in Table 5.2-1.

Eureka County Landfill

The Eureka County Landfill is located approximately 1,900 feet east of US 50. There are approximately 11 acres of disturbance associated with the Eureka County landfill within the geology and minerals CESA.

5.2.4 Roads Past Actions

Table 5.2-3 displays miles and acres of roads within each resource CESA. Acres of roads within each resource CESA are also displayed in Table 5.2-3.

Table 5.2-3 Roads Past Actions

Roads	CESAs	Miles	Acres
US 50, Approximate 100-foot Right-of-Way	Air Quality	70	849
	Bighorn Sheep	69	836
	Cultural Resources	39	473
	Elk	61	739
	Geology and Minerals	7	85
	Greater Sage Grouse	57	691
	Land Use Authorization and Access	33	400
	Migratory Birds and Eagles	262	3,176
	Mule Deer	69	836
	Pronghorn Antelope	98	1,188
	Range Resources	18	218
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles, and Greater Sage-Grouse	138	1,673
	Water Resources; Soils and Reclamation; Prime and Unique Farmland; Vegetation and Invasive, Non-Native Plant Species, and Special Status Plant Species; Special Status Small Mammals and Fish; Forest Products and Fuels	25	303
U.S. Highway 6, Approximate 100-foot Right-of-Way	Air Quality	44	533
	Bighorn Sheep	92	1,115
	Cultural Resources	3	36
	Elk	51	618
	Greater Sage Grouse	18	218
	Land Use Authorization and Access	6	73
	Mule Deer	118	1,430
	Pronghorn Antelope	133	1,612
	Range Resources	12	146
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles, and Greater Sage-Grouse	101	1,224
	Wild Horse	17	206
U.S. Highway 93, Approximate 100-foot Right-of-Way	Bighorn Sheep	1	12
	Elk	1	12
	Mule Deer	1	12
	Pronghorn Antelope	1	12
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles, and Greater Sage-Grouse	2	24

Table 5.2-3 Roads Past Actions

Roads	CESAs	Miles	Acres
SR 267, Approximate 70-foot Right-of-Way	Bighorn Sheep	4	34
	Elk	4	34
	Mule Deer	4	34
	Pronghorn Antelope	4	34
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles, and Greater Sage-Grouse	8	68
SR 278, Approximate 70-foot Right-of-Way	Air Quality	3	26
	Geology and Minerals	<1	<9
SR 318, Approximate 70-foot Right-of-Way	Air Quality	3	26
	Bighorn Sheep	<1	<9
	Elk	43	365
	Greater Sage Grouse	1	9
	Mule Deer	110	933
	Pronghorn Antelope	<1	<9
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles, and Greater Sage-Grouse	<1	<9
SR 375, Approximate 70-foot Right-of-Way	Elk	38	322
	Mule Deer	98	832
SR 379, Approximate 70-foot Right-of-Way	Air Quality	55	467
	Bighorn Sheep	55	467
	Cultural Resources	50	424
	Elk	55	467
	Geology and Minerals	21	178
	Greater Sage Grouse	44	373
	Land Use Authorization and Access	55	467
	Migratory Birds and Eagles	269	2,282
	Mule Deer	55	467
	Pronghorn Antelope	55	467
	Range Resources	41	348
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles, and Greater Sage-Grouse	111	942
	Visual Resources	26	221
	Water Resources; Soils and Reclamation; Prime and Unique Farmland; Vegetation and Invasive, Non-Native Plant Species, and Special Status Plant Species; Special Status Small Mammals and Fish; Forest Products and Fuels	129	1,095
	Wild Horse	35	297
SR 38, Approximate 70-foot Right-of-Way	Air Quality	3	26
	Elk	43	365
	Greater Sage Grouse	1	9
	Mule Deer	100	849
SR 44, Approximate 70-foot Right-of-Way	Bighorn Sheep	1	9
	Elk	1	9
	Mule Deer	1	9
	Pronghorn Antelope	1	9

Table 5.2-3 Roads Past Actions

Roads	CESAs	Miles	Acres
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles, and Greater Sage-Grouse	3	26
SR 485, Approximate 70-foot Right-of-Way	Bighorn Sheep	4	34
	Elk	4	34
	Mule Deer	4	34
	Pronghorn Antelope	4	34
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles, and Greater Sage-Grouse	8	68
SR 892 (Strawberry Road), Approximate 70-foot Right-of-Way	Air Quality	22	187
	Cultural Resources	36	306
	Greater Sage Grouse	29	246
	Migratory Birds and Eagles	59	501
	Range Resources	<1	<9
BLM Roads, Approximate 50-foot Right-of-Way	Air Quality	3,276	19,855
	Bighorn Sheep	2,379	14,418
	Cultural Resources	1,956	11,855
	Elk	2,758	16,715
	Geology and Minerals	628	3,806
	Greater Sage Grouse	2,258	13,685
	Land Use Authorization and Access	682	4,133
	Migratory Birds and Eagles	3,958	23,988
	Mule Deer	5,234	31,721
	Prime and Unique Farmland	55	333
	Pronghorn Antelope	3,414	20,691
	Range Resources	1,374	8,327
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles, and Greater Sage-Grouse	2,710	16,424
	Visual Resources	525	3,182
	Water Resources; Soils and Reclamation; Prime and Unique Farmland; Vegetation and Invasive, Non-Native Plant Species, and Special Status Plant Species; Special Status Small Mammals and Fish; Forest Products and Fuels	3,511	21,279
	Wild Horse	1,382	8,376
USFS Roads, Approximate 20-foot Right-of-Way	Air Quality	427	1,035
	Bighorn Sheep	420	1,018
	Cultural Resources	400	970
	Elk	663	1,607
	Geology and Minerals	184	446
	Greater Sage Grouse	402	975
	Land Use Authorization and Access	16	39
	Migratory Birds and Eagles	1,623	3,935
	Mule Deer	671	1,627
	Prime and Unique Farmland	11	27
	Pronghorn Antelope	551	1,336
	Range Resources	7	17
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles, and Greater Sage-Grouse	840	2,036
	Visual Resources	149	361

Table 5.2-3 Roads Past Actions

Roads	CESAs	Miles	Acres
	Water Resources; Soils and Reclamation; Prime and Unique Farmland; Vegetation and Invasive, Non-Native Plant Species, and Special Status Plant Species; Special Status Small Mammals and Fish; Forest Products and Fuels	1,107	2,684
	Wild Horse	125	303
Local/County Roads, Approximate 50-foot Right-of-Way	Air Quality	391	2,370
	Bighorn Sheep	310	1,879
	Cultural Resources	295	1,788
	Elk	442	2,679
	Geology and Minerals	64	388
	Greater Sage Grouse	277	1,679
	Land Use Authorization and Access	83	503
	Migratory Birds and Eagles	594	3,600
	Mule Deer	661	4,006
	Prime and Unique Farmland	7	42
	Pronghorn Antelope	390	2,364
	Range Resources	85	515
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles, and Greater Sage-Grouse	548	3,321
	Visual Resources	85	515
	Water Resources; Soils and Reclamation; Prime and Unique Farmland; Vegetation and Invasive, Non-Native Plant Species, and Special Status Plant Species; Special Status Small Mammals and Fish; Forest Products and Fuels	558	3,382
	Wild Horse	64	388
Other Roads, Approximate 20-foot Right-of-Way	Air Quality	16	39
	Bighorn Sheep	16	39
	Cultural Resources	16	39
	Elk	1	2
	Geology and Minerals	15	36
	Greater Sage Grouse	16	39
	Land Use Authorization and Access	13	32
	Migratory Birds and Eagles	<1	<2
	Mule Deer	1	2
	Pronghorn Antelope	32	78
	Range Resources	<1	<2
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles, and Greater Sage-Grouse	1	2
	Visual Resources	5	12
	Water Resources; Soils and Reclamation; Prime and Unique Farmland; Vegetation and Invasive, Non-Native Plant Species, and Special Status Plant Species; Special Status Small Mammals and Fish; Forest Products and Fuels	92	223

5.2.5 Recreation Past Actions

Recreation Areas, Wilderness Study Areas, Wilderness and National/State Parks

To assess cumulative impacts of surface disturbance within designated recreation areas, WSAs, wilderness and national or state parks, the acreages of disturbance in these areas were combined by individual resource CESA, excluding the socioeconomic and hazardous waste CESAs, and presented in Table 5.2-1. To assess both direct and indirect cumulative impacts, the acreages of recreation areas, WSAs, wilderness, and national or state parks that are not necessarily considered disturbance areas but are located within the comprehensive CESA were identified and presented in Table 5.2-4. Table 5.2-4 reflects the total acres of each of these areas within the comprehensive CESA (Figure 5.1-1). There are no designated recreation areas or national or state parks within any of the CESAs. Additional information regarding recreation is provided in Section 5.18.

Table 5.2-4 Recreation, Wilderness Study Areas, and Wilderness and Areas Parks Past Actions

Designated Area (Managing Agency)	Acres
Antelope Range WSA (BLM)	83,760
Bald Mountain Wilderness (USFS)	22,377
Blue Eagle WSA (BLM)	59,279
Currant Mountain Wilderness (USFS)	47,282
Fandango WSA (BLM)	43,425
Grant Range Wilderness (USFS)	52,481
Humboldt - Toiyabe National Forest	743,627
Illipah Reservoir	62
Morey Peak WSA (BLM)	19,182
Mount Irish Wilderness (BLM)	28,938
Mountain Meadow WSA (BLM)	16
Palisade Mesa WSA (BLM)	98,774
Park Range WSA (BLM)	48,809
Quinn Canyon Wilderness (USFS)	26,257
Rawhide Mountain WSA (BLM)	63,829
Red Mountain Wilderness (USFS)	20,498
Riordan's Well WSA (BLM)	56,541
Shellback Wilderness (USFS)	36,162
The Wall WSA (BLM)	40,591
Weepah Spring Wilderness (BLM)	51,393
White Pine Range Wilderness (USFS)	40,028
Worthington Mountains Wilderness (BLM)	30,594

5.2.6 Wildland Fires, Restoration, and Seeding Past Actions

Several wildland fires have occurred within the comprehensive CESA between 1983 and 2013 (Figure 5.12-1). The total acres of past wildland fires for each CESA are presented in Table 5.2-1. In addition to what is presented in Table 5.2-1, the BLM Ely District had its first event of the 2014 fire season on April 12 when lightning ignited a 45-acre wildfire in Pleasant Valley (BLM 2014e).

Revegetation treatments typically consist of seeding native species and treating noxious weeds to minimize infestations. Various revegetation treatments have occurred within the CESA (BLM 2013c). Individual restoration activities within the CESA are located greater than 16 miles from the Proposed Action and have not been included as part of the cumulative impacts analysis.

5.3 PRESENT ACTIONS

5.3.1 Mineral Development and Exploration Present Actions

This section includes current mining projects and sand and gravel operations. The acres of disturbance within each resource CESA for present mineral development and exploration are presented in Table 5.2-1. The following narrative provides a brief summary of mineral development and exploration present actions within the CESA boundary.

Alligator Mine

The Alligator Mine/ Alligator Ridge Project is located approximately 11 miles south of Barrick's Mooney Basin and controlled by Barrick Gold U.S. Inc. Past operators include Bald Mountain Mining, Inc. and USMX, Inc. The mine includes open pits, waste rock facilities, and a heap leach facility. Most closure and reclamation activities were completed by 2000. Approximately 938 acres of disturbance was permitted for the mine (BLM 2009c). Approximately 580 acres of disturbance is associated with the mine (BLM 2013c). See descriptions below under the Bald Mountain Mine as to Barrick's proposed changes to the operations of the Alligator Mine property.

Casino/Winrock Mine

The Casino/Winrock Mine is located in south Ruby Valley, White Pine County, and controlled Barrick Gold, Inc. (BLM 2009c). Approximately 226 acres of disturbance is associated with the mine (BLM 2013c). See descriptions above under the Bald Mountain Mine as to Barrick's proposed changes to the operations of the Casino/Winrock property.

Bald Mountain Mine

The Bald Mountain Mine, North Operations is located north of the Yankee and Alligator Ridge mines, approximately 36 miles north of US 50, and is operated by Barrick Gold U.S. Inc. The mine consists of the Bald Mountain Mine and Mooney Basin Plan of Operations areas. Based on a review of aerial photography, approximately 9,124 acres of currently existing disturbance is associated with the mine (BLM 2014f). Barrick is proposing a Bald Mountain Mine expansion of the existing mine facilities in their North Operations Area Project, expansion of the existing Casino/Winrock Plan of Operations and incorporation of it into the North Operations Area Project, and establishment of a South Operations Area Project that would encompass and expand the existing Yankee and Alligator Ridge mine sites (see descriptions in Section 5.4.1 Bald Mountain Mine North and South operations).

The Centennial Exploration Project

Ely Gold & Minerals Inc. (EGM) proposed the Centennial Exploration project. Approximately two acres of disturbance are associated with the project. The project is located near the Mount Hamilton Mine in White Pine County, Nevada (BLM 2013c).

Cottonwood Creek Geophysical Exploration

Southern Nevada Water Authority is conducting magnetic and temperature borehole geophysical surveys on 4.5 square miles in the Cottonwood Creek area of White Pine County. Approximately 2,880 acres of disturbance have been approved (BLM 2013c).

Gold Rock Exploration Project

The Gold Rock Exploration Project is a mineral exploration project located approximately 17 miles north of Duckwater, Nevada, located within portions of the Plan area. The exploration project is

being performed by Midway. The BLM previously authorized 267 acres of disturbance (BLM 2012k), approximately 5 acres of which has been disturbed.

Lookout Mountain Exploration Project

The Lookout Mountain Exploration Project is located approximately eight miles south of Eureka, Nevada and controlled by BH Minerals USA Inc. Previous operators include Echo Bay. Exploration activities include construction of drill sites, roads, and temporary structures. Approximately 9 acres of previous disturbance was inherited from Echo Bay. Approximately 266 acres of disturbance is permitted for the project (BLM 2010, 2013d). Based on a review of aerial photography, approximately 79 acres are currently disturbed.

Robinson Mine

The Robinson Mine, a copper, molybdenum, and gold mine, is located approximately three miles west of Ely, Nevada and controlled by KGHM North America. Approximately 5,000 acres of disturbance are associated with the mine (Kreidler 2014).

Ruby Hill Mine

The Ruby Hill Mine is a mining operation located approximately 0.7 mile northwest of Eureka, Nevada within the historic Eureka Mining District and controlled by subsidiaries of Waterton Precious Metals Fund II Cayman, LP (Barrick 2015). The existing project includes an open pit, WRDAs, heap leach pad, and process facilities. Approximately 1,742 acres of disturbance are permitted for the mine (BLM 2012d); however, based on a review of aerial photography, approximately 1,386 acres of current disturbance is associated with the mine. This mine shut down temporarily following a high wall failure in November 2013, and is in re-activation of operations (Spiegel 2014, Eureka County 2017). No federal actions are being analyzed at this time (Sherve 2014).

Wheeler Ridge Mineral Exploration Project

The Wheeler Ridge Mineral Exploration Project is located in the White Pine Range and controlled by Mount Hamilton LLC. There are approximately 75 acres of disturbance associated with the project (NDEP 2013f).

Cathedral Canyon Exploration Project

The Cathedral Canyon Exploration project is located approximately 50 miles west of Ely, Nevada and controlled by Bronco Creek Exploration Inc. Approximately five acres of disturbance are associated with the project (BLM 2013c).

Yankee Mine

The Yankee Mine is located approximately five miles south of Bald Mountain and is operated by Barrick Gold U.S. Inc. Past operators include Amselco Exploration, Inc. and Placer Dome U.S. The mine consists of a heap leach facility, three process ponds, a central processing plant, 17 pits, and several waste rock stockpiles (BLM 2009c). Approximately 354 acres of disturbance are associated with the mine (BLM 2013c). See descriptions above under the Bald Mountain Mine as to Barrick's proposed changes to the operations of the Yankee Mine property.

The following mines - Goldstrike Mine, Buckhorn Mine, Tonkin Springs Mine, Bootstrap Mine, Newmont North Operations, Carlin Mine, Leeville Underground, Gold Quarry, Chevas Exploration Project, High Desert Exploration Project, Newmont Mike Exploration Project, Mill Canyon and Horse Canyon Exploration Project, and the Mount Hope Mine - are within Eureka County, and are

within the socioeconomic CESA only. Socioeconomic cumulative impact analysis does not address surface disturbance; therefore, impacts associated with these mines are described qualitatively, and these areas are not shown in Table 5.2-1. These mines are described below to note the mineral development and exploration activities within the socioeconomic CESA. Projects within the socioeconomic CESA are also described qualitatively in Section 5.17.

Barrick Goldstrike Mine

Barrick Goldstrike Mine is located within both Eureka and Elko counties and controlled by Barrick Gold of North America. Mine operations include open pit/underground mining, milling with associated tailings disposal facilities and ancillary support facilities (BLM 2013c). Approximately 7,616 acres of surface disturbance are within the socioeconomic CESA (BLM 2013c).

Buckhorn Mine

The Buckhorn Mine is located approximately 55 miles south of Carlin, Nevada, and 47 miles north of US 50 and controlled by Buckhorn Mines Co. Approximately 465 acres of disturbance are associated with the mine (BLM 2013c).

Tonkin Springs Mine

The Tonkin Spring Mine is located approximately 40 miles northwest of Eureka, Nevada. Approximately 448 acres of disturbance are associated with the mine (BLM 2013c).

Bootstrap Mine

The Bootstrap Mine is located on the Eureka County and Elko County border and is controlled by Newmont Mining Corporation. Approximately 1,364 acres of disturbance are permitted for the mine (BLM 2013c). Approximately 1,271 acres of disturbance are associated with the mine (BLM 2013c).

Newmont North Operations

Newmont North Operations in located in northern Eureka County and controlled by Newmont Mining Corporation. Newmont North Operations consists of the Bluestar Mine, Genesis Mine, Deep Star Portal, Lantern Mine, North Lantern, Lantern 3, and North Area Leach Pad. Approximately 4,204 acres of disturbance are permitted for the operations area (BLM 2013c). Approximately 3,910 acres of disturbance are associated with the mine (BLM 2013c).

Carlin Mine

The Carlin Mine is located south of Newmont's North Operations in northern Eureka County and controlled by Newmont Mining Corporation. The Carlin Mine consists of Carlin Mine, Pete Mine, and Mill 1. Approximately 2,910 acres of disturbance are associated with the mine (BLM 2013c).

Leeville Underground

Leeville Underground is an underground mine located in northern Eureka County and controlled by Newmont Mining Corporation. Approximately 566 acres of disturbance are associated with the mine (BLM 2013c).

Gold Quarry

The Gold Quarry Mine is located in northern Eureka County and is controlled by Newmont Mining Corporation. Operations include the North/South haul road that connects Gold Quarry to the Newmont North Operations area. Approximately 9,878 acres of disturbance are associated with the mine and haul road (BLM 2013c).

Chevas Exploration Project

The Chevas exploration project is located in northern Eureka County and controlled by Newmont Mining Corporation. Approximately 168 acres of disturbance are associated with the project (BLM 2013c).

High Desert Exploration Project

The High Desert exploration project is located in northern Eureka County and controlled by Newmont Mining Corporation. Approximately 164 acres of disturbance are associated with the site (BLM 2013c).

Newmont Mike Exploration Project

The Mike Exploration project is located adjacent to Newmont's Gold Quarry mine and controlled by Newmont Mining Corporation. Approximately 48 acres of disturbance are associated with the project (BLM 2013c).

Mill Canyon

Mill Canyon Mine is located approximately 17 miles south of Crescent Valley, Nevada and controlled by Barrick Gold Corporation. Previous operators include Newmont Mining Co. and Victoria Gold Corp. Approximately 220 acres of disturbance are associated with the mine (BLM 2013c).

Horse Canyon Exploration Project

The Horse Canyon Exploration Project is located approximately 20 miles south of Crescent Valley Nevada and controlled by Barrick Cortez Inc. Approximately 688 acres of disturbance are associated with the project (BLM 2013c).

Mount Hope Project

The Mount Hope Project is located approximately 20 miles north/northwest of Eureka. The deposit contains approximately 1.3 billion pounds of proven and probable molybdenum reserves. In 2012, General Moly received its Record of Decision from the BLM and secured the remaining Nevada Division of Environmental Protection permits needed to construct and operate the Mount Hope Project. The surface disturbance associated with the proposed project totals 8,318 acres (BLM 2012h, General Moly 2014).

Sand and Gravel Operations

Approximate disturbance associated with sand and gravel operations were combined for surface disturbance calculation and provided in Table 5.2-1 under past actions as "past and present sand and gravel operations". Due to the number of sand and gravel operations within the comprehensive CESA boundary, no sand and gravel pits are shown on Chapter 5 figures.

5.3.2 Utilities, Infrastructure and Public Purpose Present Actions

There are no significant utility, infrastructure and public purpose present actions.

5.3.3 Oil, Gas, and Geothermal Development Present Actions

One primary producing oil field, the Blackburn Oil Field, is located within the socioeconomic CESA only (Hess 2011). This field is located 50 miles north of Eureka Township in Eureka County, Nevada. Approximately 340 acres of disturbance are associated with the project (BLM 2013c).

In 2014, the BLM approved an APD to drill an exploration well called Leoman Springs, located south of the Plan area, approximately 8 miles west of Currant, Nevada in Nye County. Total project disturbance would be approximately 2 acres (BLM 2014a).

Table 5.2-1 displays the total acres of oil and gas development for present action disturbance, Disturbance associated with oil and gas development was calculated using available information for the Blackburn Oil Field between 2001 and 2014 (NBMG 2011, BLM 2014c). Disturbance from oil and gas wells assumes approximately 3 acres of disturbance for each well. Well locations are obtainable, however not displayed on the CESA figures presented in the section because disturbance associated with wells is minimal.

Based on NBMG mapping of current geothermal projects and exploration activity, the majority of geothermal projects in Nevada are to the west of the CESA boundary. The only current geothermal exploration within the CESA boundary noted on NBMG mapping is the Alligator Ridge Oski Energy project, which is described below in reasonably foreseeable future actions because no known work has been completed on the project recently (NBMG 2014).

5.3.4 Recreation Present Actions

Eureka County Fairgrounds

The Eureka fairgrounds are located approximately one mile north of Eureka, Nevada. Approximately 122 acres of disturbance associated with the construction of the fairgrounds is within the and geology and minerals CESA (BLM 2013c). Construction of the fairgrounds contributes to cumulative impacts within this CESA.

5.3.5 Wildland Fires

There are presently no known wildland fires active in the CESA area.

5.3.6 Urban Development Present Actions

Eureka Canyon Subdivision

The Eureka Canyon subdivision is an approved multifamily and single family subdivision located in Eureka, Nevada. The project includes open space, a greenbelt area, and temporary housing (ECBC 2011b). Approximately 164 acres of disturbance are associated with the subdivision (BLM 2013c).

5.4 REASONABLY FORESEEABLE FUTURE ACTIONS

5.4.1 Mineral Development and Exploration

Bald Mountain Mine North and South Operations

The BLM is finalizing alternatives in the Draft Environmental Impact Statement (DEIS) for a Barrick Gold US, Inc., proposal to expand the Bald Mountain Mine located in White Pine County, about 70 miles northwest of Ely and 30 miles northeast of Eureka, Nevada. The final EIS was expected to be completed in 2014, but Barrick has reported that the final EIS may not be completed until 2015 (Elko Daily 2014). The main issue in the EIS is how to handle impacts to mule deer and Greater Sage-Grouse. An alternate plan is under development. The proposal calls for the expansion of existing mine facilities in the North Operations Area Project, expansion of the existing Casino/Winrock Plan of Operations and incorporating it into the North Operations Area Project, and establishment of a South Operations Area Project that would encompass and expand

the existing Yankee and Alligator Ridge mines (BLM 2014f). Expanding the North Operations Area Project and incorporating the Casino/Winrock Plan of Operations into the North Operations Area Project would increase the total surface disturbance from 9,124 acres to 13,704 acres and add four new heap leach pads. Establishing the South Operations Area Project would increase the total surface disturbance to 3,645 acres. The South Operation Area Project Plan of Operations would include an electrical transmission line and an access road between the North and South operations areas.

Gibellini Mine

American Vanadium proposes to develop the Gibellini Mine, located approximately 20 miles south of Eureka in Eureka and White Pine Counties, Nevada (BLM 2013a). A Plan of Operations was submitted in December 2012 to disturb approximately 730 acres to construct, operate, reclaim, and close an open pit, heap leach vanadium mining operation. The proposed project would also include a water and communications corridor extending 6.5 miles from the Fish Creek Ranch to the proposed project area, and a power corridor generally paralleling the Fish Creek Road to US 50. The project will eventually involve on-site power generation using a photovoltaic array and vanadium battery demonstration as part of the Project.

The proposed 21-mile route for the American Vanadium Gibellini Mine power line would run west from the junction at Strawberry Road and US 50 along US 50 then head south along SR 379, east along Fish Creek Road, and south terminating at the American Vanadium Gibellini Mine site. A portion of the power line will be shared with the Pan Mine and is currently under construction. The American Vanadium Gibellini Mine is located within the Gibellini Mining District.

Green Springs Mineral Exploration Project

The project is located approximately 7 miles southeast of Midway's Gold Rock project on the western flank of the White Pine Range in the southwest corner of the historic White Pine Mining District, approximately 40 miles West of Ely Nevada. An Exploration Plan of Operations was submitted to the U.S. Forest Service in October 2013 (EGM 2014), and a Draft Decision Notice and Finding of No Significant Impact for the Green Springs Exploration Project was issued in September 2014. Exploration activities in the project area would include a total of approximately 75 acres of surface disturbance within an approximate 801-acre project area over a period of approximately five years (USFS 2014b). The property consists of 76 unpatented mineral claims and 2 mining claims covering an area of 1500 acres (EGM 2014). Green Springs is a past producing gold mine which produced 1.1 million metric tons of ore averaging 2.1 g/t gold.

Griffon Mine Exploration Project

The Pilot Gold (USA) Inc. Griffon Mine Exploration Project is located approximately 35 miles southwest of Ely, Nevada within the Humboldt-Toiyabe National Forest in White Pine County. The project consists of drilling 40 exploration holes using existing roads, overland travel and constructed roads. The total disturbance of the exploration is 4.2 acres (USFS 2012).

Mount Hamilton LLC Centennial-Seligman Mining and Exploration Project

The Centennial-Seligman Mining and Exploration Project is located approximately 40 miles west of Ely on the western side of Mount Hamilton at the site of the Rea Gold's previously mined Northeast Seligman deposit. Proposed activities would disturb 476 acres of National Forest Land and 26 acres of private lands for a total of 502 acres. A total of 307 acres of the new mining operation would be within the existing disturbance footprint of the Mount Hamilton mine and 195 acres would be new disturbance (USFS 2014a).

Mount Hamilton LLC Right-of-Way Grant

The BLM authorized a Right-of-Way for improvement or widening and maintenance of existing roads on BLM-administered land with an approved disturbance area totaling approximately 10 acres, and for widening and maintaining an existing road related to mineral exploration activities (BLM 2013d). The BLM issued two commercial fuelwood harvest permits on a total of approximately 15 acres along these access roads (Coombs 2014a,b). The larger disturbance area of 15 acres was included in the cumulative effect analysis and is shown in Table 5.2-1.

Nekekim Mining Project

The Nekekim Mining Project is located in Nye County and controlled by Nekekim Mining Corporation. Nekekim currently has a pending Plan of Operations for the project. Approximately 50 acres of disturbance is proposed (BLM 2013c).

Pan Mine

The Pan Mine is Midway gold's sister project to the Gold Rock Mine, which is located only 1.4 miles away. The Pan Mine is located approximately 5 miles north of the proposed Gold Rock Mine project at the northern end of the Pancake mountain range in western White Pine County, Nevada, approximately 22 miles southeast of Eureka, Nevada, and 50 miles west of Ely, Nevada. The project was approved by BLM in December 2013 and the total permitted surface disturbance associated with Pan Mine is approximately 3,301 acres (BLM 2013c).

Southpaw/Logan Pass Exploration Project

A preliminary environmental assessment was issued by the BLM on January 3, 2014 for the proposed Southpaw/Logan Pass Exploration project. The plan proposes a total of 50 acres of surface disturbance to occur in a phased exploration program over 10 years in two areas, the Logan Pass Area and the Southpaw Area in the southern flanks of Mount Irish approximately 50 miles west of Caliente, Nevada. Fifty acres of surface disturbance associated with this proposed project are located within the mule deer CESA.

Windfall Project

The Windfall Project is located approximately four miles south of Eureka, and controlled by BH Minerals who currently has pending a Plan of Operations for the project. Approximately 150 acres of disturbance is proposed (BLM 2013c).

The following mines are within Eureka County, and are within the socioeconomic CESA: Greater Gold Quarry and Green Lantern. Socioeconomic cumulative impact analysis does not address surface disturbance; therefore, impacts are described qualitatively, and these mines are not shown in Table 5.2-1. These mines are described below to note the mineral development and exploration activities within the socioeconomic CESA. Projects within the socioeconomic CESA are described qualitatively in Section 5.17.

Gold Bar Project

The Gold Bar Project is located approximately 28 miles northwest of Eureka, Nevada and controlled by McEwen Mining Inc. who currently has a pending Plan of Operations for the project. There are approximately 835 acres of proposed disturbance associated with the project (BLM 2013c).

Greater Gold Quarry

The Greater Gold Quarry project is located approximately five miles north of Carlin, Nevada and controlled by Newmont Mining Corporation. Approximately 1,468 acres of disturbance is proposed in association with the mine expansion (BLM 2013c).

Green Lantern

The proposed Green Lantern Project is located in northern Eureka County and is controlled by Newmont Mining Corporation. Approximately 244 acres of disturbance are proposed for the project (BLM 2013c).

Sand and Gravel Operations

Reasonably foreseeable sand and gravel operations were not calculated for inclusion in Table 5.2-1 given the limited applications potentially in process for future sand and gravel activity.

5.4.2 Oil, Gas, and Geothermal Development

The BLM has issued a number of oil and gas leases within the valley floor locations (BLM 2014c,g) of the CESA. Acreage of the planned oil and gas leases is summarized in Table 5.2-1. Planned oil and gas activity within the CESA has declined in recent years (BLM 2014d; Hummer 2014). Based on NBMG mapping of current geothermal projects and exploration activity, the majority of geothermal projects in Nevada are to the west of the CESA. The only current geothermal exploration within the CESA noted on NBMG mapping is the Alligator Ridge Oski Energy project, which is described as a reasonably foreseeable action because no known work has been completed on the project recently (NBMG 2014).

Oski Energy is in the initial stages of geothermal exploration located adjacent to Alligator Ridge gold mine (NBMG 2014). Barrick Gold is considering re-opening this mine, and Oski is in discussions with them. Oski reports an estimated 20 to 40 MW resources. The location of the geothermal exploration is undetermined; therefore, the acres of disturbance are not included in Table 5.2-1 (NBMG 2012a).

5.4.3 Utilities Infrastructure and Public Purpose

Department of Energy (DOE) Electric Distribution Line

The DOE has a proposed Electric Distribution Line project pending. Total proposed disturbance associated with the DOE distribution line would be 611 acres (BLM 2013c). No exact location of the distribution line has been proposed; therefore, the acres of disturbance are not included in Table 5.2-1 (BLM 2013c).

Mount Wheeler Power Inc.

Mount Wheeler Power Inc. proposes to construct a new line from Windfall Canyon near Eureka, Nevada to New York Canyon located south of Carson City. The new line would parallel a portion of their existing power line that follows US 50. The project would also include rebuilding a portion of the existing line to connect to the existing buried power line that provides power to the Communication site on Prospect Peak. Total disturbance within the CESA would be approximately 9 acres (BLM 2013c). No exact location of the transmission line construction and upgrades have been proposed; therefore, the disturbance is not included in Table 5.2-1 (BLM 2013c).

Strawberry 69 kV Transmission Line Right-of-Way Project

Mount Wheeler Power, Inc. is proposing to construct a project that would consist of approximately 7 miles of a 69 kV overhead transmission line connecting to an existing 69 kV overhead transmission line on Strawberry Road, and would span south along Strawberry Road, and cross US 50 to its terminus adjacent to US 50 (BLM 2013b). The proposed overhead transmission line would be located adjacent to an existing 25 kV distribution line that runs adjacent to Strawberry Road. The new construction would include the 69 kV overhead transmission line and structures and a 12- to 15-foot-wide two-track maintenance road on the west side of the proposed 60-foot-wide Right-of-Way. The Right-of-Way totals approximately 53 acres. The majority of disturbance would occur from the construction of the maintenance road and to a lesser extent from the disturbance associated with the pole locations; however surface disturbance estimates for the Right-of-Way have been included in Table 5.2-1. The maintenance road would be used for the duration of the Project to inspect and maintain the overhead transmission line, as necessary.

Pan Mine Southwest Power Line Right-of Way Project

Mount Wheeler Power, Inc. is constructing a power line that would consist of approximately 35 miles of a 69 kV overhead transmission line connecting to the Mount Wheeler Power 69 kV overhead transmission line northwest of the Pan Mine and would span west adjacent to US 50, then south and southwest adjacent to SR379, then would run overland to the east then north to the Pan Mine. The new construction would include the 69 kV overhead transmission line and structures and a 12-foot-wide two-track maintenance road within the proposed 60-foot-wide Right-of-Way.

At the time of the cumulative effects analysis, a conceptual Right-of-Way that totaled 272 acres was used and is presented in Table 5.2-1; however, the approved Right-of-Way totals approximately 252 acres (Trujillo 2014). The majority of disturbance would occur from the construction of the maintenance road and to a lesser extent from the disturbance associated with the pole locations; however surface disturbance estimates for the Right-of-Way have been included in Table 5.2-1. The maintenance road would be used for the duration of operation of the Pan Mine to inspect and maintain the overhead transmission line, as necessary.

Eureka County Landfill Expansion

A Plan of Development has been submitted to expand the existing Eureka County Landfill. Approximately 80 acres of disturbance are proposed (BLM 2013c).

5.4.4 Roads

Siegel Creek Road Restoration

The USFS is proposing to reclaim approximately 11.5 miles of unauthorized roads to reduce soil erosion, reduce sedimentation into stream, and reduce road densities to improve habitats for wildlife. The project is located in the northeast portion of the Schell management unit of the Ely Ranger District, approximately 40 miles northeast of Ely, Nevada. The project is currently under analysis with the USFS and no disturbance has been proposed at this time (BLM 2013c). The project is currently under analysis with no proposed disturbance associated with it; therefore, no disturbance was included in Table 5.2-1 (BLM 2013c).

5.4.5 Other Reasonably Foreseeable Actions

Newark and Huntington Watersheds Implementation

The Newark and Huntington Watersheds are located in the corner of White Pine County covering 646,441 acres (BLM 2013e). The purpose of the action is to implement the Plan so that there is a landscape scale improvement to upland vegetation and riparian areas within the watersheds. The need for the action is to manage watersheds so that they display physical and biological conditions or functions required for necessary ecological components to achieve state water quality criteria, maintain ecological processes and sustain appropriate uses. BLM administers approximately 482,389 acres within the Newark Watershed and approximately 95,139 acres within the Huntington Watershed (BLM 2013e). The acreage of disturbance associated with the watershed implementation projects is unknown and is not included in Table 5.2-1, and the watershed implementation plan is evaluated qualitatively in this cumulative impact analysis.

5.5 WATER RESOURCES

5.5.1 CESA Boundary

The CESA boundary for water resources is shown on Figure 5.5-1 and includes groundwater basin 154 (Newark Valley) north approximately 15 miles to US 50 and groundwater basin 173B (Railroad Valley/Northern Part) south approximately 15 miles to the Duckwater Shoshone Reservation. The total area of this CESA is 483,967acres (756 square miles). This CESA was chosen because it encompasses the Proposed Action and action alternative analysis areas, and the areas within which other water uses could cumulatively interact with the water resources associated with the Proposed Action.

No mapped wetlands are present in or near the Proposed Action or Action Alternative analysis areas; therefore, no impact to wetlands are anticipated, and wetlands are not considered further in this section.

5.5.2 Introduction

The water resources CESA includes high elevation headwater areas, relatively low elevation terminal basins (i.e., playas), and elevations in between. The climate is generally semiarid, and, as is typical for the Great Basin, precipitation varies markedly with elevation. The natural hydrologic characteristics of the CESA are in large part a function of its climate, geology, and vegetation. Thus, these characteristics vary within the 756 square mile that the CESA covers.

Undeveloped wild lands comprise the majority of the water resources CESA. Its highest elevations are primarily lands that are managed by the USFS. The BLM manages the public land encompassing much of the CESA's lower elevations, although there are also sections of privately-owned land. Primary land uses within the CESA that can affect water resources include those which use water (e.g., mining, agriculture) as well as those which have the potential to affect water quality (e.g., transportation, grazing).

5.5.3 Past and Present Disturbances

Several of the past and present activities listed in Table 5.2-1 occur within the water resources CESA and likely affect the quantity or quality of surface water and/or groundwater. The Easy Junior Mine, Green Springs Mine, Centennial, Gold Rock Exploration Project, Wheeler Ridge Exploration Project, Cathedral Canyon Exploration Project and various sand and gravel pits and oil and gas wells have used or are currently using water (typically groundwater) as part of their

operations, either for dust control or processing. The Southern Nevada Water Authority has 36 pending water rights applications for the Railroad Valley/Northern Part. These permit applications were submitted during the years 1989 and 2010 and currently are categorized as "Ready for Action-Protested" (NDWR 2015a). If approved, these applications would appropriate water at a rate of 191,254 acre feet per year. Other projects within the CESA included the El Dorado to Farm Area Power Line, the Silver State Fiber Optic Line, and existing roads. These entities may also affect water quality. General surface disturbance can cause sediment loading; channel rerouting can cause erosion/sedimentation; and inadvertent spills of process water, drilling fluids, or other hazardous substances can contaminate surface water or shallow groundwater.

Power line projects may have used water during construction; their largest potential post-construction effect is likely related to erosion/sedimentation associated with access roads or un-reclaimed disturbances. Other unpaved roads, such as those crossing public land within the water resources CESA, can also be a source of sedimentation. All roads, including federal, state, local, private, BLM, and USFS roads, can present water quality impacts due to inadvertent spills or releases during vehicular accidents.

Oil and gas development has occurred within the water resources CESA. This activity typically uses water, and also has the potential to degrade both surface water and groundwater if drilling fluids are not properly managed, or if wells are not properly developed. New roads are often built in association with oil and gas development, with the same potential consequences as mentioned above. Other activities, such as grazing, that are not described in Table 5.2-1 also have the same potential consequences because they use water and involve land disturbance.

The largest water use in the water resources CESA is irrigation, with permits totaling over 27,000 afy, which is 150 percent of perennial yield for the Newark Valley. However, the actual amount of water used for irrigation is less than the permitted amount, being approximately 9,300 afy in 2011 and 2012. Using 9,300 afy for irrigation, total water use for the basin would be approximately 10,736 afy, which is well below the perennial yield for the basin (18,000 afy). In addition to its significance relative to water use, irrigation can affect water quality through return flows that have had contact with agricultural chemicals or that mobilize sediment from cultivated fields. Agricultural chemicals can affect both surface water and groundwater quality.

Regarding water in Railroad Valley/Northern part of the water resources CESA, the current perennial yield of the aquifer system in this basin (i.e., 173B) is estimated by NDWR at 75,000 afy (NDWR 2014c). The NDWR has appropriated 26,402 afy of water rights in the Railroad Valley/Northern Part (NDWR 2014c). Midway estimates that it would use water at an average rate of approximately 1,200 gpm (Midway 2013a), which equates to approximately 2,000 afy. Midway's proposed water use would represent approximately 7.6 percent of current groundwater use in the Railroad Valley/Northern Part and 2.7 percent of perennial yield. Therefore, it appears that there is a sufficient amount of unappropriated water available in the Railroad Valley/Northern Part that the Proposed Action would not impact other water users in the area.

Finally, several previous wildland fires, a prescribed burn, and a pinyon-juniper removal project may have resulted in channel incision and potentially continue to provide elevated sediment loads to water resources CESA stream channels. In sum, all of these activities have the potential to affect water resources.

BLM

Lander County

White Pine County

Eureka County

Nye County

Eureka

278

50

50

379

6

Monte Cristo Wild Horse HT

Pancake Wild Horse HMA

Sand Springs West Wild Horse HMA

Legend

- Gold Rock Mine Plan Area Boundary
- Cultural CESA
- Air Quality CESA
- Wild Horses CESA
- Forest Products and Fuels, Water Resources, Soils and Reclamation, Prime and Unique Farmland, Vegetation and invasive, Non-Native Plant Species, and Special Status Plant Species CESA
- Horse Management Area (HMA) or Horse Territory (HT)
- County Boundary
- Expanded Duckwater Shoshone Reservation (approximate boundary)

Land Ownership

- Bureau of Land Management
- Forest Service
- US Highway
- State Highway
- City

ELY DISTRICT OFFICE

FIGURE 5.5-1
WATER RESOURCES, SOILS AND RECLAMATION, PRIME AND UNIQUE FARMLAND, AIR QUALITY, VEGETATION AND INVASIVE, NON-NATIVE PLANT SPECIES, FOREST PRODUCTS AND FUELS, WILD HORSES, CULTURAL CESAs

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 7/18/2017

0 14 28 Miles

N

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.

Basemap Source: ESRI World Shade Relief Map Service

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5.5.4 Reasonably Foreseeable Future Disturbances

RFFAs are summarized at the end of Table 5.2-1. They include many of the same types of activities (with the same potential effects) as described in Section 5.4. Green Springs Mineral Exploration Project, Griffon Mine Exploration Project, Mount Hamilton Seligman-Centennial Mining Project and related access road right-of way, the Pan Project, and the Strawberry Transmission Line Project are the primary proposed projects listed in Table 5.2-1 that may occur within the water resources CESA. All of them would require surface disturbance. Often, the greatest risk to surface water with these types of projects is during and immediately after construction. Generally, the potential impacts to water resources from these RFFAs are the same as described above for the past and present activities.

5.5.5 Cumulative Disturbances

Of the total 483,967 acres covered by the water resources CESA, 10,615 acres of disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 2 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 14,294 acres, or approximately 3 percent of the CESA. This additional disturbance does not include other acreage associated with agriculture or other activities that also have the potential to affect water resources. The amount of acreage disturbed by any one activity or type of activity may not be directly proportional to water impacts because of the different types of links between surface disturbances (e.g. type of activity, soil type, and slope) and the potential for elevated erosion rates. However, with 395 acres of existing disturbance within the Plan area and approximately 3,455 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 96 acres.

5.5.6 Cumulative Effects

Surface Water

The Proposed Action and action alternatives, in combination with noted past, present, and RFFAs could impact surface water resources within the water resources CESA. Impacts could include erosion, sedimentation through ground disturbances and/or channel rerouting, vegetation clearing, stockpiling of topsoil, contact with waste rock, and general soil disturbance. These impacts can affect water quality and channel stability even in ephemeral or intermittent channels such as those found in the CESA.

Under the Proposed Action or action alternatives, implementation of the Applicant-Committed EPMs as described in Table 2.3-8 and Section 2.3.17 would minimize short-term and long-term effects to water resources. For present actions and RFFAs, these impacts would be reduced through stormwater management and other BMPs. Most of these impacts are temporary and subject to reclamation activities, which reduce the impact of an individual activity over time and reduce the potential for cumulative impact because the activities occur at various times. Further, these activities are spatially dispersed and the effects are generally localized when they occur within the type of environment found in the water resources CESA.

Climate change also may affect surface water resources within the CESA. The USGCRP has analyzed information for the southwest region of the United States, in which the CESA is located, and found that over the last several decades, scientists have observed pronounced increased temperatures and wildfires, declining snowpack and streamflow reliability, and outbreaks of insects in the region (Walsh et al. 2014; Garfin et al. 2014). Annual average temperatures in east central Nevada are projected to rise by 2.5 to 3.5 degrees F by the years 2021 to 2050, and

continue to rise by 5.5 to 6.5 degrees F by the years 2041 to 2070 and 7.5 to 8.5 degrees F by the years 2070 to 2099 based on climate model projections of a continued rise in heat-trapping gas emissions (Garfin et al. 2014). The USGS National Climate Change Viewer Program predictive model for White Pine County, Nevada projects an average minimum and maximum temperature increase of 9.9 degrees F and 10.9 degrees F, respectively, by year 2099 based on the Representative Concentration Pathway level of 8.5 (RCP 8.5) projection, which assumes emissions will continue to increase at current rates (Alder and Hostetler 2014).

Based on the modeled predicted changes, a rise in temperature would increase the risk of wildfires, earlier snowmelt and higher evaporation, all having negative implications for water resources (Garfin et al. 2014). Wildfires can leave slopes exposed to erosion, resulting in sedimentation that affects surface water quality. Earlier snowmelt and higher evaporation could reduce streamflow and precipitation recharge to groundwater, which could result in reduced spring flow. On the other hand, long-term modeled projections based on a continued rise in GHG emissions suggest an increase in the frequency of heavy precipitation events (Walsh et al. 2014). Such an increase would result in increased erosion and sedimentation and could impact surface water quality in the CESA.

Modeled projections of annual precipitation for the period of 2071 to 2099 based on a continued rise in GHG emissions suggest that east central Nevada would receive more precipitation in winter, less precipitation in spring, more precipitation in summer, and no change to a slight increase in precipitation in fall (Walsh et al. 2014). The estimated amount of water held in a volume of snow (snow water equivalent) in Nevada is projected to decline by approximately 70 percent by the end of this century based on continued rise in GHG emissions (Garfin et al. 2014). Declines in peak snow water equivalent are strongly correlated with early timing of runoff and decreases in total runoff (Garfin et al. 2014). Long-term projections for White Pine County reflect similar shifts in seasonal precipitation and runoff and a decline in snow water equivalent (Alder and Hostetler 2014).

Model estimated decline in snowpack and streamflow amounts in parts of the Southwest will likely decrease surface water supply reliability for cities, agriculture, and ecosystems (Garfin et al. 2014). Furthermore, droughts are expected to become more intense in the Southwest (Walsh et al. 2014). An increase in temperature and related increase in evaporation and frequency of wildfires coupled with a decrease in seasonal precipitation and related decrease in snow water equivalent and streamflow, groundwater recharge and spring flow would result in competition for water between agricultural, municipal and industrial uses.

While long-term climate observations and model predictions indicate continuous rise in temperature and global warming, scientists have found that climate trends are not adequately identified for periods of a few years or even a single decade but rather over a period of several decades (Santer et al. 2011). In fact, climate trends may suggest cooling over that short a span of time while overall longer term projections indicate warming (Easterling et al. 2009). This contrast is likely due to superimposing human-induced warming on a naturally varying climate; therefore, the temperature rise has not been, and will not be, uniform or smooth across the country or over time (Walsh et al. 2014).

As such, definite projection of impacts to CESA water resources due to climate change during the period of 10 years of mining and three years of reclamation under the Proposed Action or other action alternatives is difficult; however, changes in volume and timing of precipitation and soil moisture and increased erosion would have the potential to impact surface water resources. It is expected that the extent of climate change impacts to surface water resources would be similar across all alternatives.

No perennial surface water features are located within the Plan area. Facility design features and Applicant-Committed EPMs include installation and maintenance of sediment controls that would minimize erosion or sedimentation in project-related areas of disturbance. The designs for the proposed facilities, including the design storm frequency, are consistent with existing state permitting requirements. If state permitting requirements change, the proponent would respond accordingly. The proponent plans to use groundwater and a reduction in availability of surface water resources due to climate change is not expected to impact any of the action alternatives.

Groundwater

The Proposed Action includes one existing water supply and possibly one or more additional water supply wells to be developed in the basin fill aquifer. Together these wells would be capable of providing approximately 1,200 gpm (i.e., approximately 2,000 afy) of groundwater, which would be a small percentage (approximately 2.7 percent) of the aquifer's perennial yield. With the approval of Midway's applications to appropriate groundwater in May 2015, Midway received rights that the NDWR has already appropriated for the Railroad Valley/Northern Part basin. Midway would not add cumulatively to the quantity of water appropriated from the aquifer by the other activities described above in Sections 5.5.3 and 5.5.4, and would not cause use to exceed perennial yield (use would still only be slightly more than two-thirds of perennial yield).

Potential cumulative impacts to groundwater quality may occur due to inadvertent releases of hazardous substances, as a result of leakage or releases from mining or processing facilities, or due to inadvertent accidents or spills. These potential impacts include waste rock leachate, hydrocarbon spills, process water leaks or spills, septic system/leach field releases, and drilling fluid escape. Present actions and RFFAs could include no-discharge designs for all process facilities, BMPs such as spill control plans, leak detection systems, and other EPMs directed at protecting water quality. These measures would prevent these types of impacts from occurring or control them if they do occur. Further, any contaminant releases would be mitigated before reaching surface waters or groundwater, and would therefore be short-term. There is no currently available information suggesting there may be widespread impacts to groundwater quality in the water resources CESA from past or present actions. The distances between these widely separated actions would also mitigate the impacts that water quality impacts from any of these actions may have on any of the other actions.

Climate change also may affect groundwater resources within the CESA. Annual average temperatures in east central Nevada are projected to rise by 2.5 to 3.5 degrees F by the years 2021 to 2050, and continue to rise by 5.5 to 6.5 degrees F by the years 2041 to 2070 and 7.5 to 8.5 degrees F by the years 2070 to 2099 based on climate model projections of a continued rise in heat-trapping gas emissions (Garfin et al. 2014). Based on the modeled predicted changes, a rise in temperature would increase the risk of earlier snowmelt and higher evaporation, both having negative implications for groundwater resources (Garfin et al. 2014). Earlier snowmelt and higher evaporation could reduce precipitation recharge to groundwater and could result in lower soil moisture available for agricultural crops, which in turn could increase the volume of groundwater needed for irrigation.

Modeled projections of annual precipitation for the period of 2071 to 2099 based on a continued rise in GHG emissions suggests that east central Nevada would receive more precipitation in winter, less precipitation in spring, more precipitation in summer, and no change to a slight increase in precipitation in fall (Walsh et al. 2014). The estimated snow water equivalent in Nevada is projected to decline by approximately 70 percent by the end of this century based on continued rise in GHG emissions (Garfin et al. 2014). The seasonal shift in precipitation and the decrease in snow water equivalent may result in decreased streamflow and precipitation recharge

to groundwater during spring within the CESA. Furthermore, droughts are expected to become more intense in the Southwest (Walsh et al. 2014). Less precipitation and more intense periods of drought, coupled with increased evaporation, would result in competition for groundwater between agricultural, municipal and industrial uses.

While long-term climate observations and model predictions indicate continuous rise in temperate and global warming, scientists have found that climate trends are not adequately identified for periods of a few years or even a single decade but rather over a period of several decades (Santer et al. 2011). In fact, climate trends may suggest cooling over that short a span of time while overall longer term projections indicate warming (Easterling et al. 2009). This is contrast likely due to superimposing human-induced warming on a naturally varying climate; therefore, the temperature rise has not been, and will not be, uniform or smooth across the country or over time (Walsh et al. 2014). As such, definite projection of impacts to CESA water resources due to climate change during the period of 10 years of mining and three years of reclamation period is difficult; however, changes in volume and timing of precipitation and soil moisture would have the potential to impact groundwater resources. It is expected that the extent of climate change impacts to groundwater resources would be similar across all alternatives.

It should also be noted that under any of the action alternatives, the facility design would include process water reuse wherever practicable to minimize use of groundwater resources. NDWR has appropriated the water rights anticipated to be required for the project, which represent approximately 7.6 percent of the existing appropriated water rights in the Railroad Valley/Northern Part and 2.7 percent of perennial yield. Groundwater in the hydrologic basin is currently underallocated. If additional water rights would be needed for the project, it is anticipated that the proponent would be able to apply for more water rights without causing any significant additional impact on existing groundwater quantity over the short duration of the project.

5.6 GEOLOGY AND MINERALS

5.6.1 CESA Boundary

The CESA for geology and minerals is illustrated on Figure 5.6-1. The CESA encompasses the Newark Valley groundwater basin north of the Plan area to US 50 and the Railroad Valley/Northern Part groundwater basin south of the Plan area approximately 15 miles to the Duckwater Shoshone Reservation. In addition, the CESA encompasses 2-mile buffers around the Ruby Hill mine, Mount Hamilton mine, and the proposed Gibellini mine. The total area of this CESA is 499,708 acres. This CESA boundary was chosen because it encompasses areas of each groundwater basin where geology and mineral resources would be affected.

5.6.2 Introduction

Mining and mining exploration activities typically have the largest impacts on geology and minerals because they can contribute to mineral resource depletion, remove mineral resources from availability for future development, change topography, and affect geotechnical stability. Excavation of mine pits can produce unstable pit walls and overburden stockpiles can also be unstable if improperly designed or managed.

The best indicator for cumulative effects on geology and minerals is the quantity of bedrock excavated, either for economic purposes (ore) or to access economic deposits (overburden). However, this information is not available for many past actions, present actions, and RFFAs and is not considered to be an accurate indicator across the geology and minerals CESA. Therefore, surface disturbances associated with mines are used to estimate the extent of mining activity and impacts to geology and minerals.

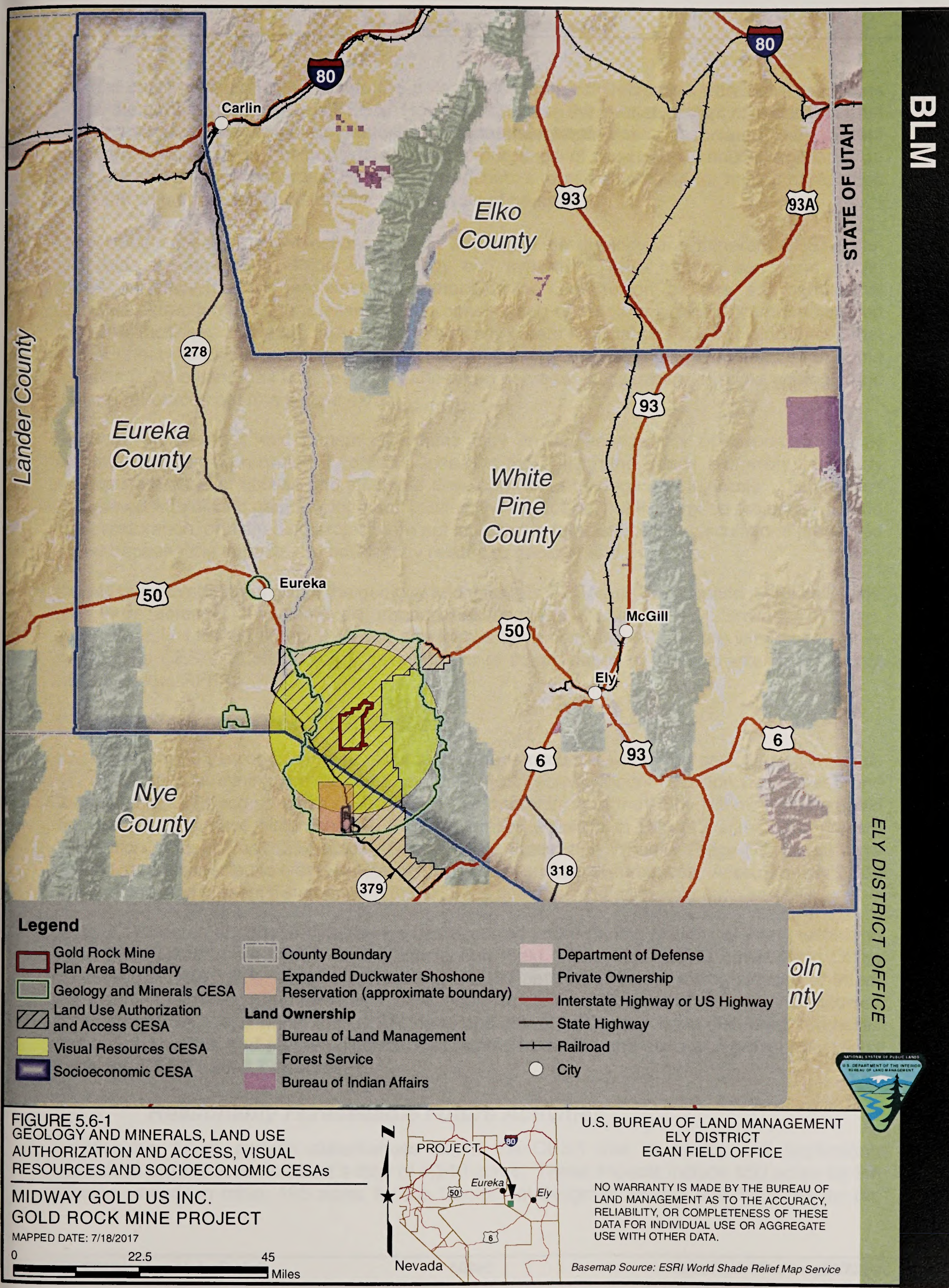

FIGURE 5.6-1
GEOLOGY AND MINERALS, LAND USE AUTHORIZATION AND ACCESS, VISUAL RESOURCES AND SOCIOECONOMIC CESAs

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 7/18/2017

0 22.5 45 Miles

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.

Basemap Source: ESRI World Shade Relief Map Service

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Mineral exploration projects indicate the potential for further development of mineral resources within the geology and minerals CESA. However, because the ultimate extent of impacts cannot be assessed at the exploratory stage, future mine development associated with current exploration activities is not considered for the purposes of assessing cumulative effects on geologic and mineral resources. Boreholes, trenches, and pits completed for mining exploration activities would remove or disturb limited volumes of bedrock.

Other past actions, present actions, or RFFAs within the geology and minerals CESA can contribute to cumulative effects on geology and mineral. These include sand and gravel extraction; utility (natural gas, electric, geothermal) line construction; oil, gas, and geothermal resource extraction; and, to a lesser extent, construction of roads, residential, commercial, and industrial facilities. However, these actions typically create surficial or shallow disturbances that do not affect the overall condition or availability of geology and minerals. Construction of some facilities (e.g., oil and gas facilities, utility lines) can decrease accessibility of some geologic and mineral resources but to a limited extent.

Construction of roads and transmission lines may impact accessibility of resources directly beneath, but can be rerouted if conflicts arise. On the other hand, roads and utility lines may increase the ease of access and stimulate development of geology and minerals. Disturbance associated with oil and gas development, utilities, infrastructure, public purpose projects, wildland fires, restoration, and seeding projects are not included in the disturbance calculations presented below because the impacts are not directly related to geology and minerals.

Oil and gas development within the geology and minerals CESA has been limited historically, and only three acres of associated disturbance has occurred (Table 5.2-1). Similarly, although approximately 110,000 acres of oil and gas leases have been issued that are within or partially overlap the CESA (BLM 2014d,g), development of these leases is not guaranteed and is not considered an RFFA.

5.6.3 Past and Present Activities

Approximately 783 acres of surface disturbances have occurred within the geology and minerals CESA due to past mining activities at Easy Junior (395 acres), Mount Hamilton (365 acres), and Green Springs (23 acres) mines (Table 5.2-1). Current mining at the Ruby Hill mine has created 1,386 acres of surface disturbances. Past exploration activities at Pan (13 acres) and present exploration at Gold Rock (267 acres), Centennial (2 acres) and Wheeler Ridge (75 acres) have created, or are expected to create, a total of 357 acres of surface disturbances. Approximately 2,686 acres of past and present disturbance in the CESA is due to mining and exploration activities.

Up to 2,172 acres of surface disturbance has occurred under mining Notices of Intent within the Egan Field Office (now known as the Bristlecone Field Office) and Mount Lewis Field Office (Section 5.2.1.10). Conservatively assuming that 50 percent of these mining Notices of Intent were within the geology and minerals CESA, approximately 1,086 acres of disturbance occurred within the CESA. Also within the CESA, sand and gravel operations have disturbed 160 acres (Table 5.2-1). Past and present disturbances related to mining and sand and gravel operations within the CESA total 3,772 acres.

5.6.4 Reasonably Foreseeable Future Activities

Foreseeable future surface disturbances within the CESA due to mining and exploration operations are expected to affect a total of 4,240 acres. These impacts include 650 acres for the Gibellini vanadium mine; 195 acres for the Centennial-Seligman Project and 15 acres for the

related access road right-of-way; 3,301 acres for the Pan Project; and 79 acres for various mineral exploration projects (Table 5.2-1).

5.6.5 Cumulative Disturbances

The CESA for geologic and mineral resources is 499,708 acres of BLM, USFS, and privately-owned lands. Of this, approximately 6,926 acres of surface disturbance has occurred, or is expected to occur, from known and quantifiable mining, exploration, and sand and gravel past, present, and RFFAs. Adding mining NOI disturbance results in a total of 8,012 acres. This disturbance affects approximately 2 percent of the total CESA.

Considering all past, present, and RFFAs in known and quantifiable locations results in approximately 13,365 acres of disturbance within the CESA. Adding the estimated disturbance from mining NOIs results in approximately 14,451 acres, which is almost 3 percent of the total CESA.Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the total amount of mining-related disturbance by 3,679 acres to approximately 17,044 acres, or slightly greater than 3 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,455 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 96 acres.

5.6.6 Cumulative Effects

The Proposed Action would contribute to the depletion of the finite gold reserves within the CESA. The quantity of gold removed would depend on market conditions and the economic cutoff of the ore. Indicated and inferred gold resources for the Project are 401,000 and 227,000 ounces of gold, respectively, based on an economic cutoff of 0.006 opt. However, indicated and inferred gold resources that could potentially be extracted by open pit mining methods are 383,000 and 215,000 ounces, respectively, at 0.008 opt. Estimates of gold reserves for the CESA are not available; however, recent estimates of proven and probable reserves are available for the Pan (864,000 ounces gold at 0.043 opt), Mount Hamilton (487,100 ounces gold at 0.022 opt in the Centennial deposit) and Ruby Hill mines (326,000 ounces gold at 0.043 opt) (NBMG 2012b). With respect to total proven and probable gold resources within the CESA of approximately 1.7 million ounces, approximately 215,000 to 383,000 ounces of gold would be removed from existing gold resources of the CESA.

5.7 SOILS

5.7.1 CESA Boundary

The CESA for soils and reclamation is illustrated in Figure 5.5-1 and is the same as the water resources CESA. This CESA encompasses 483,967 acres and was selected because erosion of soils and resultant sedimentation associated with the Proposed Action and alternatives would be limited to this area.

5.7.2 Introduction

Surface disturbing activities associated with various mineral development and exploration, oil and gas development, geothermal development, road construction, utility construction, and other activities can impact soil resources. These activities can lead to increased wind and water erosion, soil compaction, decreased soil productivity, and potential soil contamination due to chemical spills. In many cases, these impacts are offset by reclamation of disturbed areas;

however, some impacts in areas of mine pits or roads are never reclaimed. Natural processes return some soil productivity over the long-term, but are limited in much of the soils CESA by droughty soils.

Wildfires can also adversely impact soils by altering soil structure, burning organic matter in near surface soils, and removing vegetation. Area of surface disturbances within the CESA is the primary indicator of cumulative impacts to soils and are summarized in Table 5.2-1, as well as described below.

5.7.3 Past and Present Activities

A total of 6,400 acres of past soil disturbances have occurred within the soils CESA. Approximately 75 percent (4,814 acres) of these disturbances have resulted from road construction. Road construction has long-term impacts on soil resources by compacting or burying soils. Compacted soils on unsurfaced roads can increase runoff rates and act as sediment transport conduits whereas paved or sealed roads are impervious surfaces that concentrate runoff and increase the potential for erosion of soils adjacent to the road.

Past mineral exploration and development activities within the CESA have resulted in a combined disturbance of approximately 796 acres of soils. Past and present sand and gravel operations have disturbed an additional 139 acres. As described for the Proposed Action and other alternatives, impacts to soils from mining activities (e.g., loss of productivity, erosion) are often long-term but can be minimized through successful reclamation practices. Past utility, infrastructure, oil and gas development, and wildland fires have also contributed to previous soil disturbances (Table 5.2-1).

Ongoing mining and oil and gas activities have contributed to overall soil disturbances within the soils CESA. The majority (342 of 352 acres) of disturbance from present actions is associated with the Gold Rock Exploration and Wheeler Ridge Exploration projects. Mineral exploration typically involves road construction, drill pad construction, and excavation of test pits that are relatively small compared to development pits. Exploration impacts include loss of soil productivity, increased erosion, and soil compaction. Reclamation of exploration projects disturbing greater than five acres is required by the Nevada Bureau of Mining Regulation and Reclamation; therefore, total long-term impacts would be less than the total initial disturbance acreage.

5.7.4 Reasonably Foreseeable Future Activities

Foreseeable future soil disturbances within the soils CESA are expected to affect a total of 3,863 acres. These impacts include 3,301 acres for the Pan Project; 195 acres for the Centennial – Seligman Mining and Exploration Project and 15 acres for the related access road right-of-way; 79 acres for mineral exploration projects; and one acre associated with the Strawberry 69kV Transmission Line (Table 5.2-1).

The amount of reasonably foreseeable future wildland fire that will occur in the soils CESA is unknown and not quantifiable; therefore, it was not considered for this analysis.

5.7.5 Cumulative Disturbances

The soils CESA includes approximately 483,967 acres of BLM, USFS, and privately-owned lands. Of this, approximately 10,615 acres of disturbance has, or is expected to occur from known and quantifiable past, present, and RFFAs. This represents a disturbance of approximately 2 percent of the total CESA. Existing road and utility networks would be used by some projects to co-locate

facilities, decreasing the need for further disturbances. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the total amount of disturbance by approximately 3,679 acres to approximately 14,294 acres, or approximately 3 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,455 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 96 acres.

5.7.6 Cumulative Effects

The Proposed Action and alternatives would impact soil resources within the soils CESA, mainly during construction and topsoil salvage activities. Cumulative effects to soils would include decreased soil productivity and resistance to erosion. These effects would be long-term. Most impacts would occur in areas where soils are severely prone to erosion; however, sediment transport and sedimentation in nearby drainages due to precipitation and snowmelt runoff would be minimized by use of stormwater diversions, sediment retention basins, and BMPs. Past actions may have resulted in similar impacts. Some areas disturbed have not been fully reclaimed and may remain impacted. All present actions and RFFAs within the CESA that occur on BLM and USFS land would be required to implement BMPs similar to those implemented for the Proposed Action.

Climate change also may affect soil resources within the CESA. The USGCRP has analyzed information for the southwest region of the United States, in which the CESA is located, and found that over the last several decades, scientists have observed pronounced increased temperatures and wildfires and declining snowpack (Walsh et al. 2014, Garfin et al. 2014). Annual average temperatures in east central Nevada are projected to rise by 2.5 to 3.5 degrees F by the years 2021 to 2050, and continue to rise by 5.5 to 6.5 degrees F by the years 2041 to 2070 and 7.5 to 8.5 degrees F by the years 2070 to 2099 based on climate model projections of a continued rise in heat-trapping gas emissions. The USGS National Climate Change Viewer Program predictive model for White Pine County, Nevada projects an average minimum and maximum temperature increase of 9.9 degrees F and 10.9 degrees F, respectively, by year 2099 based on RCP 8.5 projection, which assumes emissions will continue to increase at current rates (Alder and Hostetler 2014). Summer temperatures are projected to continue rising, and a reduction of soil moisture is projected for much of the western U.S. in summer (Walsh et al. 2014).

This reduction in soil moisture in time could impact plant communities and could result in replacement of deep-rooted native perennial grass and shrub communities by annual grasses that lack deeper rooting systems and therefore do not hold soils in place. As annual grasses die, the plant matter dries out and serves as fuel for wildfires, increasing the risk of wildfires and the extent of the spread of wildfires. Wildfires would remove vegetation that anchors soil in place, leaving soils on slopes exposed to erosion and reduced soil productivity. Less snowpack also would contribute to lower soil moisture.

Additionally, modeled projections of annual precipitation for the period of 2071 to 2099 based on a continued rise in GHG emissions suggest that east central Nevada would receive more precipitation in winter, less precipitation in spring, more precipitation in summer, and no change to a slight increase in precipitation in fall (Walsh et al. 2014). The estimated snow water equivalent in Nevada is projected to decline by approximately 70 percent by the end of this century based on continued rise in GHG emissions (Garfin et al. 2014). Declines in peak snow water equivalent are strongly correlated with early timing of runoff and decreases in total runoff (Garfin et al. 2014). Projections for White Pine County reflect similar shifts in seasonal precipitation and runoff and a decline in snow water equivalent (Alder and Hostetler 2014). Furthermore, droughts are expected

to become more intense in the Southwest (Walsh et al. 2014). On the other hand, long-term modeled projections based on a continued rise in GHG emissions suggest an increase in the frequency of heavy precipitation events (Walsh et al. 2014). Such an increase would result in increased erosion and sedimentation and could erode the top layers of soil that contain microorganisms essential to plant growth, reducing soil productivity.

An increase in temperature and related increase in evaporation and frequency of wildfires, coupled with a decrease in springtime precipitation, a related decrease in snow water equivalent and streamflow, groundwater recharge and spring flow, and an increase in frequency of heavy precipitation events could result in decreased soil productivity within the CESA.

While long-term climate observations and model predictions indicate continuous rise in temperature and global warming, scientists have found that climate trends are not adequately identified for periods of years but rather for periods of decades (Santer et al. 2011). In fact, climate trends may suggest cooling over that short a span of time while overall longer term projections indicate warming (Easterling et al. 2009). This contrast is likely due to superimposing human-induced warming on a naturally varying climate; therefore, the temperature rise has not been, and will not be, uniform or smooth across the country or over time (Walsh et al. 2014).

As such, definite projection of impacts to CESA soil resources due to climate change during the period of 10 years of mining and three years of reclamation under any of the action alternatives is difficult; however, changes in soil moisture and increased erosion would have the potential to impact soils. It is expected that the extent of climate change impacts to soils would be similar across all alternatives. Under any of the action alternatives, the proponent would implement BMPs to minimize erosion and sedimentation throughout the mine life, from construction through reclamation, and would use a reclamation seed mixture approved by BLM that is appropriate for site conditions. During the 10-year life of mine and three-year reclamation life, soil resources in the CESA are not anticipated to be affected by the projected changes.

5.8 PRIME AND UNIQUE FARMLAND

5.8.1 CESA Boundary

The CESA for prime and unique farmlands is shown on Figure 5.5-1 and is the same as the water resources CESA. The total area of this CESA is 483,967 acres of land, of which approximately 8,603 acres (1.8 percent) are classified as prime farmland if irrigated and reclaimed of excess salts and sodium. Based on the analysis conducted in Section 4.6, approximately 3 acres of prime farmland soils would be impacted by the Proposed Action. This disturbance or loss of 3 acres of Prime Farmland would represent a loss of less than 0.03 percent of the prime farmlands within the CESA.

5.8.2 Introduction

The main impact to prime farmland soils is disturbance of the ground surface which could adversely affect productivity of soils or result in long term displacement of prime farmland soils by project facilities. Cumulative effects to prime farmlands in the CESA primarily occur from mining and exploration activities, sand and gravel extraction operations; agriculture; oil and gas development; roads; and wildland fires. These activities often modify landscapes and could displace prime farmlands or affect productivity. Acres of disturbance in the sections below are presented in Table 5.2-1.

It is important to note that the disturbance numbers addressed throughout this section relate specifically to surface disturbance. In the case of soils, the amount of surface disturbance may or

may not directly relate to impacted prime farmland soils. Information was not available for other projects to allow direct comparison of specific impacts to prime farmlands across the CESA.

5.8.3 Past and Present Disturbances

Past and present disturbances within the CESA total approximately 6,400 acres. Past and present mineral development and exploration projects within the CESA include the 2007 Wildland Fire, Easy Junior Mine, Gold Rock Exploration, Wheeler Ridge Exploration Project, Green Springs Mine, Pan Mine Exploration Project, the Cathedral Canyon Exploration Project, and Centennial Exploration Project.

There are approximately 139 acres of disturbance associated with past and present sand and gravel operations and approximately 3 acres of disturbance associated with oil, gas, and geothermal development projects within the CESA. In addition, there are approximately 4,814 acres of disturbance associated with roads within the CESA (Table 5.2-1).

5.8.4 Reasonably Foreseeable Future Disturbances

There are a total of 3,863 acres of foreseeable future disturbances within the CESA, including the Pan Mine Project; the Centennial-Seligman Mining and Exploration Project and related access road right-of-way; the Green Springs Mineral Exploration Project; the Griffon Mine Exploration Project; and the Strawberry 69 kV Transmission Line.

5.8.5 Cumulative Disturbances

The prime farmlands CESA includes approximately 483,967 acres of BLM, USFS, and privately-owned lands. Of this, approximately 10,615 acres of disturbance has, or is expected to occur from known and quantifiable past, present, and RFFAs. This represents a disturbance of approximately 2 percent of the total CESA. Existing road and utility networks would be used by some projects to co-locate facilities, decreasing the need for further disturbances. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the total amount of disturbance by approximately 3,679 acres to approximately 14,294 acres, or approximately 3 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,455 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 96 acres.

5.8.6 Cumulative Effects

Some past activities and reclamation actions have resulted in loss of soils and long-term soil productivity. Extraction and exploration of mineral resources could directly displace prime farmlands or reduce soil productivity as a result of erosion and soil compaction. All present actions and RFFAs within the CESA that occur on BLM and USFS land would be subject to BMPs to minimize erosion from stormwater runoff.

Climate change may also impact prime farmlands in the CESA. Average annual temperatures in east central Nevada are projected to rise by 2.5 to 3.5 degrees F by the years 2021 to 2050, and continue rise by 5.5 to 6.5 degrees F by the years 2041 to 2070 and 7.5 to 8.5 degrees F by the years 2070 to 2099 based on climate model projections of a continued rise in heat-trapping gas emissions. Summer temperatures are projected to continue rising, and a reduction of soil moisture is projected for much of the western U.S. in summer (Walsh et al. 2014). Based on the modeled predicted rise in temperature, these changes increase the risk of wildfires, earlier snowmelt and

higher evaporation (Garfin et al. 2014). Earlier snowmelt and higher evaporation could reduce streamflow, precipitation recharge to groundwater, and spring flow, which could reduce availability of water resources for irrigation of prime farmlands in the CESA and therefore productivity of those farmlands. Increased evaporation due to higher temperatures, especially during the summer growing season, would reduce soil moisture, which also could reduce productivity of prime farmlands in the CESA.

Modeled projections of annual precipitation for the period of 2071 to 2099 based on a continued rise in GHG emissions suggest that east central Nevada would receive more precipitation in winter, less precipitation in spring, more precipitation in summer, and no change to a slight increase in precipitation in fall (Walsh et al. 2014). Based on continued rise in GHG emissions, the estimated snow water equivalent in Nevada is projected to decline by approximately 70 percent by the end of this century (Garfin et al. 2014). Declines in peak snow water equivalent are strongly correlated with early timing of runoff and decreases in total runoff (Garfin et al. 2014), which also could reduce availability of water resources for irrigation of prime farmlands in the CESA. Long-term projections for White Pine County reflect similar shifts in seasonal precipitation and runoff and a decline in snow water equivalent (Alder and Hostetler 2014). On the other hand, long-term modeled projections based on a continued rise in GHG emissions show an increase in the frequency of heavy precipitation events (Walsh et al. 2014). More frequent heavy precipitation events could result in more erosion and soil loss, affecting productivity of soils identified as prime farmlands.

While long-term climate observations and model predictions indicate continuous rise in temperature and global warming, scientists have found that climate trends are not adequately identified for periods of years but rather for periods of decades (Santer et al. 2011). In fact, climate trends may suggest cooling over that short a span of time while overall longer term projections show warming (Easterling et al. 2009). This contrast is likely due to superimposing human-induced warming on a naturally varying climate; therefore, the temperature rise has not been, and will not be, uniform or smooth across the country or over time (Walsh et al. 2014).

As such, projection of impacts to prime farmlands in the CESA due to climate change during the period of 10 years of mining and three years of reclamation under any of the action alternatives is difficult; however, changes in soil moisture, increased soil erosion and spread of nonnative invasive annual grass species would have the potential to impact prime farmlands. It is expected that the extent of climate change impacts to prime farmlands would be similar across all alternatives. Under any of the action alternatives, the proponent would implement Applicant-Committed EPMs to minimize erosion and sedimentation throughout the life of the mine (from construction through reclamation) and would use a reclamation seed mixture approved by BLM that is appropriate for site conditions. To minimize spread of invasive species and therefore maximize availability of water for desired seeded species, no irrigation is proposed. Minimizing soil loss through erosion control and successful reclamation would minimize impacts to prime farmlands. During the 10-year life of mine and three-year reclamation life, prime farmlands in the CESA are not anticipated to be affected by the projected changes.

5.9 AIR QUALITY

5.9.1 CESA Boundary

The CESA for air quality is shown on Figure 5.5-1 and encompasses a 50 km grid (617,760 acres) centered on the Plan area. The CESA for air was defined by the BLM and, based on the grid typically used for air modeling and the anticipated extent of air impacts from project activities.

5.9.2 Introduction

Data from the closest ambient air quality monitoring station, located approximately 120 miles north of the Plan area in Elko County, indicate that air quality is excellent (BLM 2012a, ECPLUAC 2008). Therefore, excellent air quality generally exists in the air quality CESA.

Cumulative impacts to air quality in the CESA from past, present, and RFFAs are largely from fugitive dust generated by mining activities, utility construction, infrastructure development such as road construction and improvements, public projects such as landfill construction, oil and gas operation an exploration, wildland fire, and vehicle travel on unpaved roads. Vehicle emissions and fugitive dust generated by traffic traveling on US 50 can affect air quality. Travel on unpaved roads in the CESA can affect air quality from vehicle emissions and fugitive dust, but this type of use has not affected air quality measurably in the past and is not considered a concern (BLM 2013c). The nearest Class I area is the Jarbidge Wilderness Area, which is located approximately 160 miles north of the Plan area.

5.9.3 Past and Present Actions

Historical activities involving emissions sources in the air quality CESA have included mining and mineral exploration activity; oil and gas exploration and development; and gravel pit, utility and infrastructure development (Table 5.2-1). Historical vegetation management efforts have included grazing and limited prescribed burning (BLM 2013c). Table 5.2-1 shows surface disturbance for the past actions, present actions, and RFFA. This cumulative impact analysis is based primarily on air quality emissions from surface disturbance. In addition to acres of disturbance quantified in Table 5.2-1, prescribed burns have periodically occurred in the CESA. Smoke generated during prescribed burns has intermittent impacts on local air quality, but prescribed burns prevent more significant impacts of larger, potentially catastrophic fires that could otherwise occur. The projects identified for the cumulative analysis account for surface disturbance and fugitive dust emissions on both a short- and long-term basis.

There is ongoing mining exploration occurring within the CESA including Centennial Exploration Project, Gold Rock Exploration Project, and Wheeler Ridge Exploration Project. There is limited ongoing exploration for oil and natural gas (3 acres) in the air quality CESA (Table 5.2-1). These activities could generate dust that could lead to minor impacts in the immediate vicinity; however, dust control plans are typically required for such activities and implementation of dust control measures would minimize impacts.

5.9.4 Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions involving emissions sources in the air quality CESA are similar to those that are presently occurring and include mining, mineral exploration exploration including the Green Springs Mineral Exploration Project, Griffon Mine Exploration Project, Centennial-Seligman Mining and Exploration Project, Centennial-Seligman Access Road Right-of-Way Grant, the Pan Mine (Table 5.2-1); and utility development including the Strawberry 69 kV Transmission Line and Mount Wheeler Power Pan Mine Southwest Power Line (Table 5.2-1). Reasonably foreseeable mining, mineral exploration, and utility development activities could generate dust that could lead to moderate impacts in the immediate vicinity; however, dust control plans are typically required for such activities and implementation of dust control measures would minimize impacts.

The BLM has issued a number of oil and gas leases within the valley floor locations (BLM 2013c) of the air quality CESA; however, planned oil and gas activity within the CESA has declined in recent years (BLM 2014d, Hummer 2014). Drilling activities typically last for several weeks.

Exploration of oil and gas in the CESA has the potential to have moderate impacts to cumulative air quality over the short-term. The development or expansion of oil and gas wells could have an impact over the long-term.

Ground disturbances and construction activity could have a moderate impact on air quality approximately one mile downwind from the well site and within approximately 100 yards of primary access routes (BLM 2013c). During exploratory activities, diesel engines power the drill rig and natural gas is either vented or flared off. Flaring or gas venting at sites that show development potential could result in moderate air quality impacts within approximately one half mile from the well (BLM 2013c). Production of oil and gas would be for the life of the well which could be decades. The extent of moderate impacts from a production well site depends on the volume of oil or gas found, how it is stored or processed on-site, how it is transported off site, and whether well production equipment must be run on electricity, diesel, or gas. Production wells beyond moderate size are not expected in or near the CESA. The area of moderate impact for potential oil and gas field development and production would be estimated to be limited to within a two-mile radius around developed well sites and within 100 yards of primary access routes (BLM 2013c). The current ongoing exploration for oil and natural gas (3 acres) in the CESA is small.

BLM decisions, including prescribed burns and energy development, could affect air quality in the CESA. Prescribed burns would be expected to have little effect regionally, but could affect local air quality intermittently and over the short-term.

5.9.5 Cumulative Disturbances

Projects involving ground disturbing activities would contribute to cumulative fugitive dust emissions. Ground disturbing activities would occur in the air quality CESA from existing and foreseeable projects and from the proposed project. Total ground disturbance for existing and foreseeable projects is presented in Table 5.2-1.

5.9.6 Cumulative Effects

Excellent air quality generally exists in the CESA. Ground disturbing activities from past and present projects and RFFAs would impact air quality. However, these impacts are typically localized for all but the largest areas of disturbance (BLM 2013c). Land management activities, regional growth, and intermittent actions, such as wildland fire, could be expected to result in impact.

The initial step in determining the scope of the cumulative air quality impact assessment is to determine the geographic range of the background source emission inventory that would be appropriate for the cumulative impact assessment. The proposed project has few stationary thermal emission sources, and the tallest stack is not anticipated to be higher than 55 feet tall. Therefore, the proposed project does not use or create any high temperature emission sources or emission sources with tall stacks which would discharge air pollutants up into the atmosphere, well above ground level, which could produce elevated concentrations in locations distant from the sources.

Instead, the proposed project emission sources are overwhelmingly low level, fugitive sources which emit air pollutants near ground level. As a result, the highest modeled ambient concentrations of each of the proposed project's emitted air pollutants are located on, or immediately adjacent to, one of the proposed project's modeled fenced mine area boundary

receptors, and these ground-level concentrations decrease with increasing distance from the emission sources (EMA 2014b).

Because the proposed project emission sources do not produce elevated concentrations in locations distant from the sources, this cumulative impact assessment is limited to modeling the proposed project emission sources together with all of the emission sources for projects located within 20 km of the center of the proposed project which have been issued, or have applied for, an NDEP Bureau of Air Pollution Control (BAPC) Class 1, Class 2 or Class 3 non-general (that is, non-portable equipment) permit. Using information available from the NDEP BAPC website, only the Midway Pan Mine project was identified within a 20 km radius of the center of the proposed project emission sources (EMA 2014b).

Cumulative modeling analyzed the "ALL" source group, which includes both the proposed project emission sources and nearby off-site emission sources (i.e., Pan Mine), and the "CUMONLY" source group, which includes only the nearby off-site inventory sources (EMA 2014b). Table 5.9-1 and Table 5.9-2 list, for the "ALL" and "CUMONLY" cumulative modeling source groups, each of the modeled air pollutants, the applicable averaging period, the applicable NAAQS or NvAAQS, the applicable modeled concentrations (EMA 2014b), the NDEP-recommended permitting background concentrations, the more conservative representative background concentrations greater than zero (Table 3.7-3), the resulting total concentrations, and the percentage of the applicable standard for the resulting total concentration using the more conservative representative background concentrations greater than zero.

Total cumulative effects, using either NDEP-recommended permitting background concentrations or more conservative representative background concentrations greater than zero, are below NAAQs and NvAAQS.

For the Proposed Action, the BLM compared the estimated potential mercury emissions that EMA calculated (EMA 2014b) with the Nevada state total (EPA 2015) using mercury emissions information presented in the 2011 National Emissions Inventory (EPA 2015). The Gold Rock Mine Project could increase the total Nevada mercury gold mining emissions by less than 1 percent. The total estimated direct and indirect emissions of GHG under the Proposed Action or other action alternatives (Table 4.7-6) represent approximately 0.14 percent of 2010 statewide gross GHG emissions (NDEP 2012), while process emissions would represent approximately 0.017 percent.Considering the emissions from past and present projects, RFFAs and any of the action alternatives, impacts to regional air quality or climate change are not expected. Therefore, cumulative air quality impacts in the CESA are not anticipated.

However, climate change may impact air quality in the CESA. Annual average temperatures in east central Nevada are projected to rise by 2.5 to 3.5 degrees F by the years 2021 to 2050, and continue to rise by 5.5 to 6.5 degrees F by the years 2041 to 2070 and 7.5 to 8.5 degrees F by the years 2070 to 2099 based on projections of a continued rise in heat-trapping gas emissions (Garfin et al. 2014). Increased temperatures can reduce air quality, because atmospheric chemical reactions proceed faster in warmer conditions (Garfin et al. 2014).

While long-term climate observations and model predictions indicate continuous rise in temperature and global warming, scientists have found that climate trends are not adequately identified for periods of years but rather for periods of decades (Santer et al. 2011) and can in fact show cooling over that short a span of time while overall longer term projections show warming (Easterling et al. 2009). This contrast is likely due to superimposing human-induced warming on a naturally varying climate; therefore, the temperature rise has not been, and will not be, uniform or smooth across the country or over time (Walsh et al. 2014).

Table 5.9-1 Modeled Air Pollutant Concentrations – Cumulative – NAAQS

Criteria Pollutant	Averaging Period	NAAQS (µg/m³)	Modeled High[1] (µg/m³)	Background Concentration		Total Estimated Impact		Total % of NAAQS
				NDEP-Recommended Background Concentration (Used in DEIS)[2] (µg/m³)	Selected Representative Background Concentration[3] (µg/m³)	Total, Using NDEP-Recommended Background Concentration (Used in DEIS)[2] (µg/m³)	Total, Using Selected Representative Background Concentration[3] (µg/m³)	Using Selected Representative Background Concentration[3] (µg/m³)
ALL Source Group								
CO	8-hour	10,000	175	0	744	175	919	9.20
	1-hour	40,000	500	0	1,947	500	2,447	6.10
NO_2	Annual	100	6.5	0	2.1	6.5	8.6	8.60
	1-hour	188	157	0	9.1	157	166	88
SO_2	3-hour	1,300	10.9	0	6.3	10.9	17.2	1.30
	1-hour	196	17.9	0	6	17.9	23.9	12
PM_{10}	24-hour	150	24.2	10.2	10.2	34.4	34.4	23
$PM_{2.5}$	Annual	12	2.4	2.4	2.3	4.8	4.7	39
	24-hour	35	14.3	7	8	21.3	22.3	64
CUMONLY Source Group								
CO	8-hour	10,000	175	0	744	175	919	9.20
	1-hour	40,000	500	0	1,947	500	2,447	6.10
NO_2	Annual	100	5.4	0	2.1	5.4	7.5	7.50
	1-hour	188	88	0	9.1	88	97.1	52
SO_2	3-hour	1,300	3.2	0	6.3	3.2	9.5	0.70
	1-hour	196	5	0	6.0	5.0	11.0	5.60
PM_{10}	24-hour	150	12	10.2	10.2	22.2	22.2	14.80
$PM_{2.5}$	Annual	12	2.3	2.4	2.3	4.7	4.6	38
	24-hour	35	9.9	7	8	16.9	17.9	51

Table 5.9-1 Modeled Air Pollutant Concentrations – Cumulative – NAAQS

Notes:
NDEP = Nevada Division of Environmental Protection
NO_2 = nitrogen dioxide
PM_{10} = particulate matter 10 microns or less in diameter
NAAQS = National Ambient Air Quality Standard
CO=carbon monoxide
SO_2 = sulfur dioxide
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

$PM_{2.5}$ is a subset of PM_{10}, and both $PM_{2.5}$ and PM_{10} are subsets of PM. An emission factor is identified for each activity that is applied to calculate PM; then a ratio is applied to calculate PM_{10} and $PM_{2.5}$ from the total. For some activities PM equals PM_{10}. Further information on PM estimation and modeling is presented in EMA (2014a and 2014b). Estimated concentrations of PM_{10} and $PM_{2.5}$ are presented for comparison to air quality standards.

1 Modeled cumulative impacts presented in EMA 2014b. The 1-hour SO_2 modeled concentration is the 4th high daily maximum 1-hour concentration. The 1-hour NO_2 modeled concentration is the modeled 8th high daily maximum 1-hour NO_X concentration to which the conservative national default NO_2/NOx ratio of 0.80 has been applied. The conservative national default NO_2/NO_x ratio of 0.75 has been applied to the modeled annual NO_X concentration.

2 Bureau of Air Pollution Control (BAPC) recommended values for use in state air quality permitting (EMA 2014) and used in the DEIS; values for PM_{10} were based on contemporary measurements at Great Basin National Park – Lehman Caves monitoring station and $PM_{2.5}$ were based on contemporary measurements at Jarbidge Wilderness Area monitoring station See Section 3.7 and Table 3.7-3 in this FEIS for summary of values recommended by NDEP for air quality permitting.

3 See Section 3.7 and Table 3.7-3 in this FEIS for summary of process used to select representative background concentrations; sources of concentrations are also identified in footnotes below.

CO = Selected carbon monoxide background concentrations are based on measurements at the Yosemite National Park – Turtleback Dome monitoring station.

NO_2 = Selected nitrogen dioxide background concentrations are based on measurements at the Alamo Lake State Park monitoring station.

SO_2 = Selected sulfur dioxide background concentrations are based on measurements at the Alamo Lake State Park monitoring station. Please note that in 2010 the EPA discontinued regulation of the standards for annual and 24-hour averaging periods for SO_2; however, values were included for completeness of the table and for comparison to the NvAAQS annual and 24-hour standards..

PM_{10} = Selected PM_{10} background concentrations are the current NDEP-recommended values for air quality permitting; concentrations are based on measurements at the Great Basin National Park – Lehman Caves monitoring station. Please note that in 2006 EPA and BAPC discontinued regulation of a PM_{10} annual standard.

$PM_{2.5}$ = Selected $PM_{2.5}$ background concentrations are the current NDEP-recommended values for air quality permitting; concentrations are based on measurements at the Jarbidge Wilderness Area monitoring station.

Table 5.9-2 Modeled Air Pollutant Concentrations – Cumulative – NvAAQS

Criteria Pollutant	Averaging Period	NvAAQS (µg/m³)	Modeled High[1] (µg/m³)	Background Concentration		Total Estimated Impact		Total % of NvAAQS[3]
				NDEP-Recommended Background Concentration (Used in DEIS)[2] (µg/m³)	Selected Representative Background Concentration[3] (µg/m³)	Total, Using NDEP-Recommended Background Concentration (Used in DEIS)[2] (µg/m³)	Total, Using Selected Representative Background Concentration[3] (µg/m³)	
ALL Source Group								
CO	8-hour	10,500	194	0	744	194	938	8.9
	1-hour	40,500	503	0	1,947	503	2,450	6.1
NO_2	Annual	100	17.6	0	2.1	17.6	19.7	20
	1-hour	188	NM	0	9.1	157	166	88
SO_2	3-hour	1,300	12.2	0	6.3	12.2	18.5	1.4
	1-hour	196	NM	0	6.0	17.9	23.9	12
PM_{10}	24-hour	150	28.3	10.2	10.2	38.5	38.5	26
$PM_{2.5}$	Annual	12	NM	2.4	2.3	4.4	4.3	20
	24-hour	35	NM	7.0	8.0	21.3	22.3	64
CUMONLY Source Group								
CO	8-hour	10,500	194	0	744	194	938	8.9
	1-hour	40,500	503	0	1,947	503	2,450	6.1
NO_2	Annual	100	17.5	0	2.1	17.5	19.6	20
	1-hour	188	NM	0	9.1	88.0	97.1	52
SO_2	3-hour	1,300	3.5	0	6.3	3.5	9.8	0.75
	1-hour	196	5.0	0	6.0	5.0	10.99	5.6
PM_{10}	24-hour	150	13.7	10.2	10.2	23.9	23.9	16
$PM_{2.5}$	Annual	12	NM	2.4	2.3	4.7	4.6	38
	24-hour	35	NM	7.0	8.0	16.9	17.9	51

Table 5.9-2 Modeled Air Pollutant Concentrations – Cumulative – NvAAQS

Notes:
NM = not modeled; please note that when the air quality modeling was conducted, no modeling was conducted for certain averaging periods for NO_2, SO_2, or $PM_{2.5}$ NvAAQS because the NvAAQS standards had not yet been promulgated by the state.
NDEP = Nevada Division of Environmental Protection
CO=carbon monoxide
NO_2 = nitrogen dioxide
SO_2 = sulfur dioxide
PM_{10} = particulate matter 10 microns or less in diameter
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter
$PM_{2.5}$ is a subset of PM_{10}, and both $PM_{2.5}$ and PM_{10} are subsets of PM. An emission factor is identified for each activity that is applied to calculate PM; then a ratio is applied to calculate PM_{10} and $PM_{2.5}$ from the total. For some activities PM equals PM_{10}. Further information on PM estimation and modeling is presented in EMA (2014a and 2014b). Estimated concentrations of PM_{10} and $PM_{2.5}$ are presented for comparison to air quality standards.

1 Modeled cumulative impacts presented in EMA 2014b.2 Bureau of Air Pollution Control (BAPC) recommended values for use in state air quality permitting (EMA 2014) and used in the DEIS; values for PM_{10} were based on contemporary measurements at Great Basin National Park – Lehman Caves monitoring station and $PM_{2.5}$ were based on contemporary measurements at Jarbidge Wilderness Area monitoring station See Section 3.7 and Table 3.7-3 in this FEIS for summary of values recommended by NDEP for air quality permitting.

3 See Section 3.7 and Table 3.7-3 in this FEIS for summary of process used to select representative background concentrations; sources of concentrations are also identified in footnotes below.

CO = Selected carbon monoxide background concentrations are based on measurements at the Yosemite National Park – Turtleback Dome monitoring station.

NO_2 = Selected nitrogen dioxide background concentrations are based on measurements at the Alamo Lake State Park monitoring station.

SO_2 = Selected sulfur dioxide background concentrations are based on measurements at the Alamo Lake State Park monitoring station. Please note that in 2010 the EPA discontinued regulation of the standards for annual and 24-hour averaging periods for SO_2; however, values were included for completeness of the table and for comparison to the NvAAQS annual and 24-hour standards.

PM_{10} = Selected PM_{10} background concentrations are the current NDEP-recommended values for air quality permitting; concentrations are based on measurements at the Great Basin National Park – Lehman Caves monitoring station. Please note that in 2006 EPA and BAPC discontinued regulation of a PM_{10} annual standard.

$PM_{2.5}$ = Selected $PM_{2.5}$ background concentrations are the current NDEP-recommended values for air quality permitting; concentrations are based on measurements at the Jarbidge Wilderness Area monitoring station.

Sources: Modified from EMA 2014b

As such, projection of impacts to air quality in the CESA due to climate change during the period of 10 years of mining and three years of reclamation under any of the action alternatives is difficult; however, increased temperatures and related increase in atmospheric chemical reactions would have the potential to reduce air quality. It is expected that the extent of climate change impacts to air quality would be similar across all alternatives. Under any of the action alternatives, the proponent would comply with NDEP air quality permitting requirements and implement Applicant-Committed EPMs to minimize fugitive dust throughout the life of the mine (from construction through reclamation).

5.10 VEGETATION, INCLUDING NOXIOUS AND NON-NATIVE, INVASIVE WEEDS AND SPECIAL STATUS PLANTS

5.10.1 CESA Boundary

The CESA boundary for vegetation including noxious and non-native, invasive weeds and special status plants is shown on Figure 5.5-1 and is the same as the water resources CESA. The total area of this CESA is 483,967 acres. This CESA boundary was chosen because cumulative effects would be limited to this area.

5.10.2 Introduction

Sources of disturbance within the vegetation CESA primarily include mining and exploration, exploration notices, sand and gravel extraction operations, utility lines, oil and gas development, roads, and wildland fires. Disturbance associated with these actions involves vegetation clearing, which promotes the establishment of noxious and non-native species. Vegetation species within the CESA are common and widespread throughout Nevada. Areas of surface disturbance in the sections below are presented in Table 5.2-1. Past and present actions within the vegetation CESA have likely resulted in some negative impacts to vegetation.

5.10.3 Past and Present Disturbances

Past mineral development and exploration actions within the CESA includes the Easy Junior Mine, Mount Hamilton Mine, Green Springs Mine, and Pan Project exploration for a combined disturbance of approximately 796 acres. Although the acreage associated with these projects has not been actively reclaimed, natural reclamation of vegetation species has likely occurred over time resulting in various levels of vegetation. Present mineral development and exploration actions within the CESA include several active mines and mineral exploration projects, including Centennial Exploration Project, Gold Rock Exploration Project, Wheeler Ridge Exploration Project, and Cathedral Canyon Exploration Project, which represent an additional 349 acres of disturbance. Finally, an additional 139 acres of disturbance within the CESA are due to past and present sand and gravel mining operations. In total, there is approximately 1,284 acres of past and present disturbance associated with mineral development and exploration activities in the CESA.

In addition to mineral development, approximately 6 acres within the CESA have been disturbed or are presently being disturbed for oil and gas development. Impacts of mineral and oil and gas development and exploration can be long-term; however reclamation of vegetation species, whether natural or man-made, will eventually occur. Noxious and non-native, invasive weed species are more likely to establish in disturbed areas; therefore, successful reclamation assists to limit the spread of these species.

Utility related disturbance with in the CESA includes the El Dorado to Farm Area Power Line which runs along the northwest corner of the CESA for a total of approximately 53 acres of

disturbance. Additionally the Silver State fiber optic line is located along US 50 at the northern boundary of the CESA for a total of 18 acres of additional past disturbance. A total of 71 acres within the CESA have been previously disturbed for utility projects. While these types of disturbances do not typically result in a loss of land access, vegetation clearing from construction of utilities and access roads increases the likelihood of noxious and non-native, invasive species establishment. After construction of these projects, access roads remain maintained which creates a minor, long-term impact to vegetation in the CESA. These roads may be also used by those who would not have otherwise traveled to these locations (i.e., recreational use), which may lead to the spread and establishment of noxious and non-native, invasive species.

There are approximately 4,814 acres of disturbance associated with roads within the CESA (Table 5.2-1). Establishment of roads effects vegetation for the long-term. Areas disturbed by vehicles are often slower to reestablish because the soils have been compacted. Noxious and non-native, invasive species are typically the first species to establish, especially along road corridors and where vehicles travel off road. Vehicles that travel off road spread seeds of noxious and non-native, invasive species. Roads create access into areas that might not otherwise be accessible. This increases the risk of off- highway vehicle use which has a greater likelihood of spreading seeds of noxious and non-native, invasive species.

Approximately 577 acres of the CESA has previously burned as a result of wildland fire. Burned areas result in patched landscapes that create natural fire breaks and diversify habitat for wildlife; however, often burned landscapes become dominated by noxious and non-native, invasive species.

5.10.4 Reasonably Foreseeable Future Disturbances

Reasonably foreseeable future disturbances within the CESA include approximately 75 acres of disturbance associated with Green Springs Mineral Exploration Project; approximately 195 acres of exploration associated with the Centennial-Seligman Mining and Exploration Project and 15 acres related to the access road right-of-way; approximately 3,301 acres associated with the Pan Project; four acres associated with the Griffon Mine Exploration Project, and one acre associated with the Strawberry 69kV transmission line. Disturbance as a result of these proposed activities would likely result in vegetation removal of 3,591 acres.

The amount of wildland fire that could occur within the reasonably foreseeable future within the CESA is unknown and not quantifiable; therefore, it was not considered for this analysis.

5.10.5 Cumulative Disturbances

The CESA for vegetation including noxious and non-native, invasive weeds and special status plants is approximately 483,967 acres of BLM, USFS, and privately-controlled lands. Of the 483,967 acres covered by the CESA, approximately 10,615 acres of disturbance are associated with past actions, present actions, and RFFAs, which is a disturbance of approximately 2 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 14,294 acres, or approximately 3 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,455 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 95 to 96 acres.

5.10.6 Cumulative Effects

The vegetation community types found within the vegetation CESA are common and widespread throughout the CESA. The Proposed Action or other action alternatives combined with past,

present, and RFFA disturbances could result in cumulative effects to various types of vegetation including noxious and non-native, invasive weeds and special status plants. Cumulative effects could include changes in vegetation composition, spread of noxious or non-native invasive species, increased erosion potential, and displacement of some types of activity (range use, recreation). However, for those projects with a federal nexus, implementation of EPMs or BMPs, reclamation, and continued monitoring until successful establishment of vegetation species within disturbed areas would improve the composition of vegetation, limit the spread and establishment of noxious and non-native invasive species, and reduce the potential for erosion within the CESA.

Climate change may affect vegetation within the CESA. Average annual temperatures in east central Nevada are projected to rise by 2.5 to 3.5 degrees F by the years 2021 to 2050, and continue to rise by 5.5 to 6.5 degrees F by the years 2041 to 2070 and 7.5 to 8.5 degrees F by the years 2070 to 2099 based on climate model projections of a continued rise in heat-trapping gas emissions. Based on the modeled predicted rise in temperature, these changes would increase the risk of wildfires, earlier snowmelt and higher evaporation (Garfin et al. 2014). Summer temperatures are projected to continue rising, and a reduction of soil moisture is projected for much of the western U.S. in summer (Walsh et al. 2014). Projections for White Pine County suggest an even longer period of reduced average monthly soil moisture, spanning from late spring through early winter (Alder and Hostetler 2014).

More frequent wildfires would result in more frequent removal of existing vegetation communities and further reduce soil moisture in affected areas, providing more opportunities for invasive species such as annual grasses that would be more tolerant of warmer temperatures and lower moisture conditions. In time some invasive species could outcompete native perennial species in the CESA.

Earlier snowmelt and higher evaporation could reduce streamflow, precipitation recharge to groundwater, and spring flow, which could reduce availability of water resources necessary for vegetation growth in the CESA. Reductions in soil moisture also could limit or inhibit vegetation growth in the CESA. On the other hand, long-term modeled projections based on a continued rise in GHG emissions show an increase in the frequency of heavy precipitation events (Walsh et al. 2014). More frequent heavy precipitation events could result in more erosion and soil loss, affecting productivity of soils and in turn the health of vegetation supported by those soils.

Modeled projections of annual precipitation for the period of 2071 to 2099 based on a continued rise in GHG emissions suggest that east central Nevada would receive more precipitation in winter, less precipitation in spring, more precipitation in summer, and no change to a slight increase in precipitation in fall (Walsh et al. 2014). Based on continued rise in GHG emissions, the estimated snow water equivalent in Nevada is projected to decline by approximately 70 percent by the end of this century (Garfin et al. 2014). Declines in peak snow water equivalent are strongly correlated with early timing of runoff and decreases in total runoff (Garfin et al. 2014), which also could reduce availability of water resources for vegetation growth in the CESA. Long-term projections for White Pine County reflect similar shifts in seasonal precipitation and runoff and a decline in snow water equivalent (Alder and Hostetler 2014).

Provencher and Anderson modeled impacts to vegetation in Nevada assuming an average temperature rise of 3 degrees F over the next 30 years. The modeled projections show a shift in functional groups, where pinyon-juniper woodlands would shift toward sagebrush-dominated communities and sagebrush-dominated communities would shift toward salt desert scrub communities. In addition to impacts from the rise in temperature, a projected increase in the frequency of fire would impact the makeup of vegetation communities (Provencher and Anderson 2011).

While long-term climate observations and model predictions indicate continuous rise in temperature and global warming, scientists have found that climate trends are not adequately identified for periods of years but rather for periods of decades (Santer et al. 2011). In fact, climate trends may suggest cooling over that short a span of time while overall longer term projections show warming (Easterling et al. 2009). This contrast is likely due to superimposing human-induced warming on a naturally varying climate; therefore, the temperature rise has not been, and will not be, uniform or smooth across the country or over time (Walsh et al. 2014).

As such, projection of impacts to vegetation in the CESA due to climate change during the period of 10 years of mining and three years of reclamation under any of the action alternatives is difficult. Despite the uncertainty it is reasonable to expect over the next ten to thirty years there is likely to be a vegetational shift towards species and habitats that are different. Neilson et al. (2005) made a number of predictions about the potential changes that may occur within sagebrush habitats in the Great Basin and concluded:

> "The rate of change or displacement of sagebrush would likely follow three different stages, each with longer time lags. The first change would be physiognomic within the existing community. For example, if moisture conditions were to dramatically improve, sagebrush has the capability to grow to heights of at least two meters, as it currently does in areas on the eastern toe-slope of the Steens Mountain in southeastern Oregon. Secondly, nearby, but perhaps subdominant species might become more dominant and might begin displacing the existing species. The current encroachment of woodlands into the sagebrush may be an example of that. Lastly, the migration of new species from other areas, such as the southwest deserts would require seed dispersal over long distances, establishment and growth in order to displace the sagebrush. This last process could require decades to centuries." (Neilson et al. 2005).

Based on this analysis although the direct impacts to vegetation it could be expected that climate change impacts to vegetation in the CESA would be similar under any of the alternatives.

Under any of the action alternatives, the proponent would implement Applicant-Committed EPMs to minimize erosion and sedimentation throughout the life of the mine (from construction through reclamation) and would use a reclamation seed mixture approved by BLM that is appropriate for site conditions. To minimize spread of invasive plant species and therefore maximize availability of water for desired seeded species, no irrigation is proposed. Implementation of these measures is anticipated to minimize impacts to project-related vegetation due to climate change.

5.11 WILDLIFE RESOURCES, INCLUDING SPECIAL STATUS WILDLIFE AND MIGRATORY BIRDS

5.11.1 CESA Boundary

The wildlife CESAs include the following:

- General wildlife other than special status small mammals and fish, big game, migratory birds, eagles, and Greater Sage-Grouse: Hunt Unit 131 (998,955 acres)
- Special status small mammals and fish: Groundwater sub-basin 154 (Newark Valley) north approximately 15 miles to US 50 and groundwater sub-basin 173B (Railroad Valley/Northern Part) south approximately 15 miles to the Duckwater Shoshone Reservation (water resources CESA) (483,967 acres)
- Mule deer: Hunt Units 131, 132, 133, 134 (these four units make up Area 13), and Hunt Unit 108 in Area 10, north of US 50 (4,262,792 acres)

- Elk: Hunt Units 131, 132, and a portion of Hunt Unit 108 south of the Falcon to Gondor power line (2,205,883 acres)
- Pronghorn antelope: Hunts Units 131, 145, 163, and 164 (2,816,033 acres)
- Bighorn sheep: Hunt Units 131, 164 (1,744,450 acres)
- Migratory birds and eagles: Plan area and 10-mile buffer and power line routes for the Proposed Action and alternatives (484,411 acres)
- Greater Sage-Grouse: Four NDOW Greater Sage-Grouse population management units - Butte/Buck/White Pine, Diamond, Monitor, and Quinn (1,727,788 acres)

These CESAs (Figure 5.11-1) were used to analyze effects to wildlife because they incorporate the wildlife habitat within and adjacent to the Plan area where most of the impacts may occur from the Proposed Action (Section 4.8.2).

5.11.2 Introduction

Sources of disturbance within the wildlife CESA include primarily mining and exploration, exploration notices, sand and gravel extraction operations, utility lines, oil and gas development, roads, and wildland fires. Disturbance associated with these actions result in changes to wildlife habitat, noise disturbance/displacement, and an increase in competition for forage and changes in the structure or composition of native plant communities.

5.11.3 Past and Present Disturbances

General Wildlife

Past and present disturbances within Hunt Unit 131, which is the CESA for general wildlife, have likely been both positive and negative, to varying degrees, on wildlife. The foremost effect to wildlife within the area has been habitat changes associated with past and present mineral development and exploration activities, and grazing (Table 5.2-1). Other effects that are not quantified have included the majority of historical mineral development and exploration, noise disturbance/displacement from mineral development and exploration, roads, and recreational activities.

Effects related to land use include loss of habitat, displacement, and fragmentation as a result of mineral development and exploration, roads, fuels treatments, and recreation. Specific to small and less mobile wildlife species (i.e., small mammals, amphibians, and reptiles), past effects from direct crushing and mortality by livestock, large wild ungulates, and vehicles would likely also occur within the CESA. In addition, grazing can contribute effects by increasing competition for forage and changes in the structure or composition of native plant communities. Grazing within the wildlife CESA is conducted in compliance with standards and guidelines contained in the Ely District Approved Resource Management Plan (BLM 2008b).

Past and present disturbances from mineral development and exploration activities have resulted in fragmentation of certain wildlife populations and their habitats. In addition, past and present disturbances from oil/gas and geothermal development activities as well as other utility line and infrastructure activities have resulted in disruption of certain wildlife populations and their habitats. Fragmentation effects within the wildlife CESA have not been quantified by the land management agencies as quantification is very difficult because no studies are available. The relatively small area that has been directly impacted by these past and present activities (approximately three percent of the CESA) and associated, unquantified indirectly impacted area is likely to have minor impacts on the region's wildlife populations.

Human presence tends to disturb many species of wildlife throughout their habitats. Past and present recreational uses in the area include hunting, shed antler hunting, fishing, all-terrain vehicle (ATV) and Off Highway Vehicle (OHV) use, camping, and picnicking. Human disturbance during periods of the year when wildlife are otherwise stressed, due to a lack of forage and/or harsh weather (as occurs during the winter season), can further stress wildlife and may increase mortality. Activity during the breeding seasons for some species can lead to reduced reproductive success. Road construction and use tends to fragment wildlife habitats and leads to increased mortalities for certain species within their habitats. However, some positive impacts may be realized by those species, such as raptors and scavengers, that benefit from increased carrion (i.e., road kill) within their habitats. In general, roads lead to increased direct mortality from vehicle collisions.

In general, wildlife are affected by livestock grazing due to competition for forage, direct mortality by trampling (i.e., amphibians and reptiles or nests of small mammals), and habitat removal/conversion. Reduction in grass understory and change in vegetation composition can also impact nesting success, predation, and wildfire regimes. Proper rotation and stocking rates can minimize impacts to wildlife.

Special Status Small Mammals and Fish

Within the CESA for special status small mammals and fish, major past and present disturbances to wildlife habitat have resulted from mineral development and exploration activities (1,284 acres quantified), oil gas and geothermal development (6 acres quantified), utilities and infrastructure (71 acres quantified), roads (4,759 acres), wildland fire (577 acres quantified), recreation, and livestock grazing.

Big Game

Past and present disturbances from mineral development and exploration activities, oil/gas and geothermal development activities, roads, utilities, wildland fire, and urban development have resulted in habitat removal and fragmentation of big game ranges. Other effects that are not quantified include historic mineral development and exploration, roads, and recreational activities. Fragmentation effects in the CESAs have not been quantified by the land management agencies as quantification is difficult due to lack of available studies. Past and present disturbances have likely resulted in disruption of big game populations. Total quantified past and present disturbances on big game are as follows: bighorn sheep (35,848 acres), elk (53,738 acres), mule deer (145,360 acres), and pronghorn antelope (49,807 acres).

Human presence tends to disturb big game throughout their habitats. Big game may also be subject to traffic collisions, particularly during migration. Past and present recreational uses in the area include hunting, fishing, all-terrain vehicle (ATV) and Off Highway Vehicle (OHV) use, camping, and picnicking. Human disturbance during periods of the year when big game are otherwise stressed, due to a lack of forage and/or harsh weather (as occurs during the winter season), can further stress wildlife and may increase mortality. Activity during the breeding seasons for some species can lead to reduced reproductive success.

In general, big game species are affected by livestock grazing due to competition for forage and habitat removal/conversion. Proper rotation and stocking rates can minimize impacts to big game.

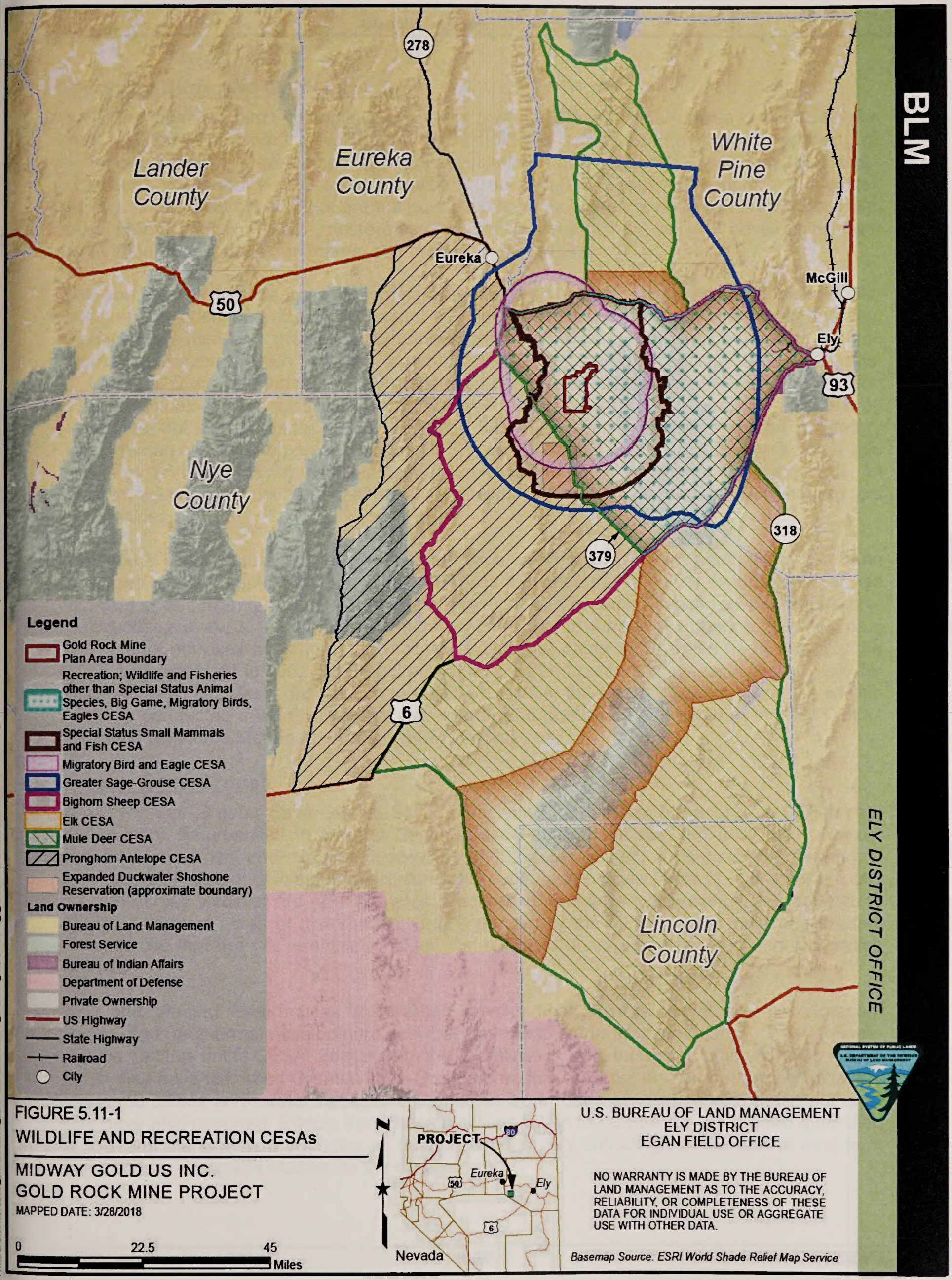

FIGURE 5.11-1
WILDLIFE AND RECREATION CESAs

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT
MAPPED DATE: 3/28/2018

0 22.5 45 Miles

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.

Basemap Source: ESRI World Shade Relief Map Service

PATH: Z:\GIS\PROJECTS_ENVICO\001817_GOLDROCK\GIS\ARCMAP_MXD\2017_AFEIS\FIGURE_5_11-1 WILDLIFE AND RECREATION CESAS.MXD | LAST SAVED BY: MESTIFANOS | LAST SAVED ON: 3/28/2018 10:29:52 AM

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Migratory Birds and Golden Eagles

Within the migratory bird and eagle CESA, major past and present disturbances to wildlife habitat have resulted from mineral development and exploration activities (1,381 acres quantified), oil gas and geothermal development (21 acres quantified), utilities and infrastructure (229 acres quantified), wildland fire (439 acres quantified), roads (5,313 acres), recreation, and livestock grazing. Other disturbances that are not quantified have included the majority of historic mineral development and exploration, noise disturbance/displacement from mineral development and exploration, roads, fuels treatments, and recreational activities.

Past and present disturbance affecting migratory birds and golden eagles has likely been similar to the effects described above for general wildlife and special status small mammals and fish. Impacts from past and present disturbances on migratory birds and golden eagles include vegetation removal which reduces potential habitat, forage and nesting area, and nest disturbance. Direct and indirect impacts from past and present disturbances include the addition of tall structures on the landscape (e.g., power lines) that may provide perching and nesting substrates, but also potentially pose a collision hazard to raptors, eagles, and other migratory birds. Human activity and presence in the CESA, as well as the presence of livestock, large wild ungulates, and vehicles may result in nest disturbance and trampling of ground-nesting birds. In addition, grazing can contribute to effects by changing the structure or composition of native plant communities.

Past and present disturbance and associated impacts on migratory bird populations has been minimized with the implementation of the MBTA as amended in 1972. Any disturbance that has occurred or is currently occurring within the migratory bird breeding season would require pre-construction surveys to identify nesting migratory birds prior to surface disturbance. Similarly, past and present activities occurring in the migratory bird and eagle CESA have had to comply the BGEPA as amended in 1962. The requirement for past and present activities to comply with the BGEPA has limited direct disturbance to nesting eagles in the CESA. Grazing within the wildlife CESA is conducted in compliance with standards and guidelines contained in the Ely District Approved Resource Management Plan (BLM 2008b).

Greater Sage-Grouse

Within the four Greater Sage-Grouse PMUs comprising the Greater Sage-Grouse CESA, past and present disturbances to Greater Sage-Grouse habitat have resulted from the following: mineral development and exploration activities (5,882 acres quantified); oil/gas and geothermal activities (117 acres); utilities, infrastructure and public purpose activities (1,639 acres); roads (17,769 acres); wildland fire (23,126 acres); recreation; and livestock grazing. This equates to 48,533 quantified acres of disturbance, or 2.8 percent of the CESA. Other past and present disturbances that are not quantified include installation of fences and seeding and restoration projects.

Past and present disturbances from urban development, mineral development/exploration, oil/gas, and geothermal development activities have resulted in fragmentation of Greater Sage-Grouse habitats in the CESA. Effects from these activities cause increased ambient noise levels, which may have disturbed Greater Sage-Grouse breeding, nesting, and brood-rearing behavior. Direct mortalities and further habitat fragmentation from roads associated with these activities may have also occurred. Effects from these activities within the CESA have not been quantified by the land management agencies as quantification is very difficult given the lack of long-term noise and mine impacts studies for the area.

Past and present disturbances from utilities, infrastructure and public purpose activities as well as other utility line activities have resulted in disruption of certain wildlife populations and their habitats, including Greater Sage-Grouse. The relatively small area that has been directly impacted by these past and present activities would likely result in minor and in some cases temporary impacts. Activities such as utility lines also have indirect effects on Greater Sage-Grouse, as Greater Sage-Grouse tend to avoid habitat near tall structures and thus may be displaced over a wider area than the footprint of direct disturbance (Schroeder 2010). Habitat disturbance and displacement along linear corridors may result in fragmentation of formerly contiguous Greater Sage-Grouse habitat. Fragmentation effects within the CESA have not been quantified by the land management agencies as quantification is very difficult.

Road construction and use tends to fragment wildlife habitats and leads to increased mortalities for Greater Sage-Grouse within their habitats. Mortalities may be direct from vehicle collisions or indirect from habitat fragmentation effects or other repercussions such as increased ambient noise levels which may lead to habitat avoidance or interfere with breeding activities.

Wildland fire alters Greater Sage-Grouse habitat and leads to conversion from sagebrush dominant vegetation cover types to invasive annual grassland monocultures which have little or no value to the species. Wildland fire may fragment areas of suitable sagebrush habitat and lead to increased direct and indirect mortalities of Greater Sage-Grouse within their habitats. Reseeding and restoration activities after a wildland fire may have positive results on Greater Sage-Grouse habitats although the effects from these activities are often not realized for many years until desirable plants have had an opportunity to become established.

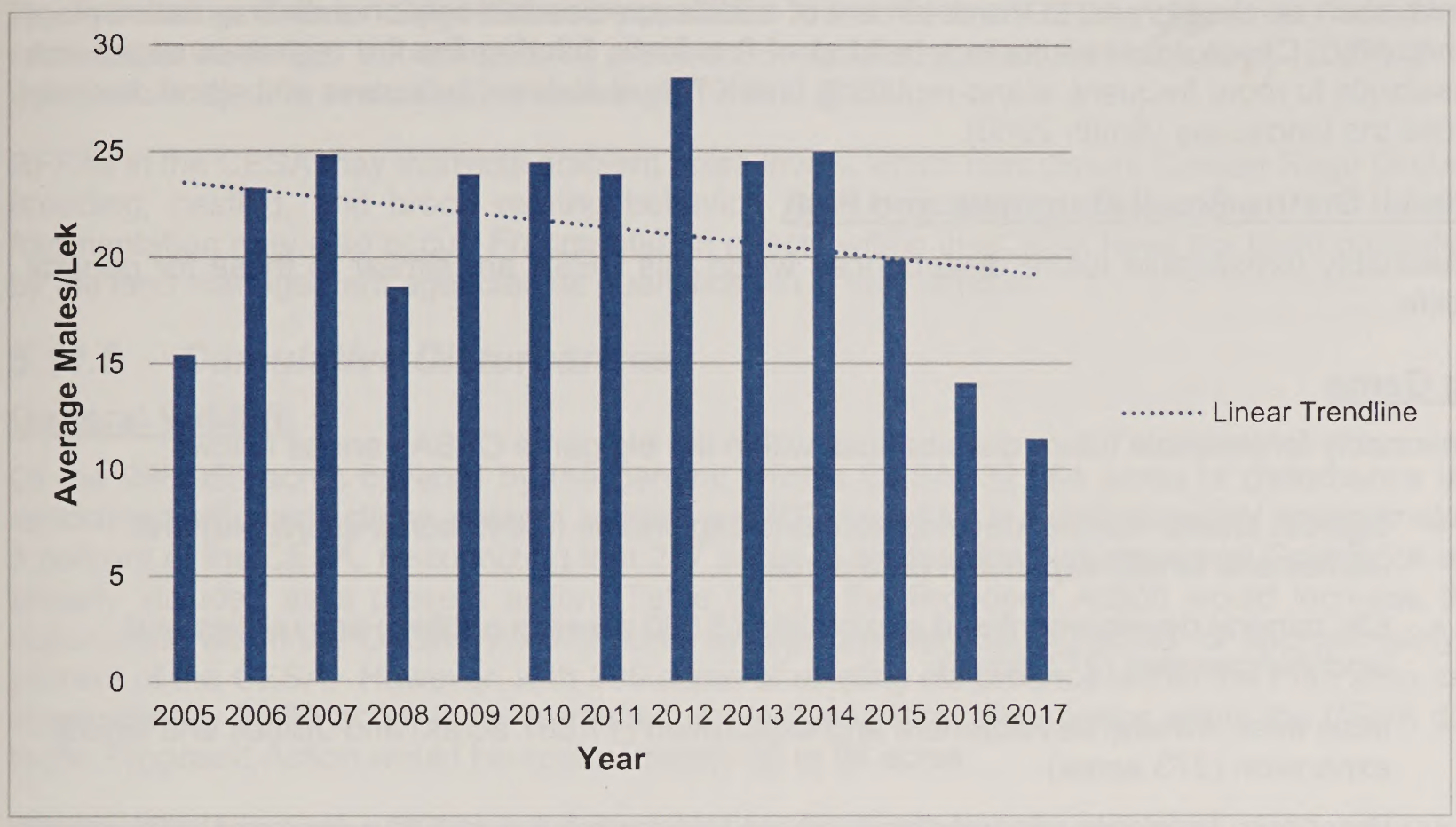
In general, Greater Sage-Grouse can be affected by livestock grazing due to increasing competition for forage, changes in structure or composition of native plant communities, and habitat removal/conversion. Reduction to grass understory can also impact nesting success, predation, and wildfire regimes. Proper rotation and stocking rates can minimize impacts to wildlife, including Greater Sage-Grouse.

Some past and present disturbances such as pinyon-juniper removal and reclaimed projects may eventually have a positive effect on the populations within the CESA, and particularly their habitats.

Nest predation by common ravens may also have an effect on Greater Sage-Grouse populations. Ravens can have substantial predatory impacts on prey species such as Greater Sage-Grouse. Raven numbers have increased 300 percent in the western United States since 1980 (Coates and Delehanty 2010).

NDOW monitors Greater Sage-Grouse populations by conducting lek counts. Trend leks are a subset of known leks that are counted annually and multiple times each year. The data obtained from trend leks are used to determine annual population trends. These data provide the best available representation of Greater Sage-Grouse population trends in Nevada. The most current trend lek data provided by NDOW suggest that the Greater Sage-Grouse population in the CESA decreased from 2005 to 2017, as measured by the average number of males attending each lek (Figure 5.11-2). Causes for this decrease are not understood. Possible causes may include weather-related effects on breeding season and available forage resources, changes in predator populations, movement to other non-trend survey leks, or natural population fluctuations. As part of mitigation for residual surface disturbance for the Pan Mine FEIS, the proponent has sponsored USGS studies to collect data to better understand the variables that may be contributing to changes in population and trends.

Figure 5.11-2 Average Number of Males per Lek for Trend Leks in the CESA, 2005 – 2017



Sources: NDOW 2017b

5.11.4 Reasonably Foreseeable Future Disturbances

General Wildlife

Reasonably foreseeable future disturbances within this CESA include mineral development and exploration (3,590 acres quantified) and utilities and infrastructure (273 acres quantified). These activities may lead to displacement and habitat fragmentation for wildlife. Fragmentation effects within the CESA have not been quantified by the land management agencies as quantification is very difficult. Impacts from RFFAs would include vegetation removal which may reduce potential habitat, forage and nesting area.

Wildfire is also a reasonably foreseeable future disturbance to wildlife in the CESA. Since 1986 the length of the active wildfire season has increased by 78 days and the average duration of large fires has increased from 7.5 days to 37.1 days (HTNF 2011); this trend is anticipated to continue into the future. In general, wildfires affect wildlife habitat by shifting the plant community to an earlier successional stage.

The effect of the fire on wildlife depends on the severity, size, and duration of the fire; stand-replacing fires have more drastic changes on habitat, while understory fires have more transient effects. Wildlife may temporarily abandon a burned area until it re-grows to a suitable successional stage. Some wildlife flourish in burned areas in the first several years after a fire, as the fire may result in vigorous new growth of early successional plants. For wildlife that depend on mature habitat types, wildfire may result in a long-term loss of habitat. In the sagebrush steppe ecosystem, wildfire tends to kill sagebrush, resulting in reduced canopy cover but increased growth of grasses and forbs. Depending on the species, sagebrush can take 50 years or more to recover to original stand structure after fire.

Increased duration and frequency of wildfires contributes to the proliferation of invasive annual plants, such as cheatgrass, to the detriment of wildlife species that rely on a diverse native plant community. Cheatgrass results in a buildup of fine fuels, altering the fire regime in sagebrush grasslands to more frequent, stand-replacing fires. This reduces shrub cover and stand diversity across the landscape (Smith 2000).

Special Status Small Mammals and Fish

Reasonably foreseeable future disturbances within this CESA are similar to those for general wildlife.

Big Game

Reasonably foreseeable future disturbances within the big game CESAs are as follows:

- Bighorn sheep: mineral development and exploration (3,640 acres quantified) and utilities and landfill expansion (273 acres).
- Elk: mineral development and exploration (3,590 acres quantified) and utilities and landfill expansion (273 acres).
- Mule deer: mineral development and exploration (11,887 acres) and utilities and landfill expansion (273 acres).
- Pronghorn antelope: mineral development and exploration (4,520 acres) and utilities and landfill expansion (273 acres).

These activities may lead to displacement of big game and fragmentation of big game habitats. Fragmentation effects within the CESA have not been quantified by the land management agencies. Big game-vehicle collisions are likely to become more frequent in the CESA as the overall traffic volume increases as a result of these RFFAs.

Migratory Birds and Golden Eagles

Reasonably foreseeable future disturbances within this CESA include mineral exploration (3,586 acres quantified) and utilities and infrastructure (301 acres quantified). Effects from these activities may result in habitat fragmentation, habitat alteration and disturbance, and disturbance of active nests. Collisions with power lines and vehicles associated with RFFDs would be expected, as would trampling of active nests associated with future livestock grazing. Compliance with the MBTA and BGEPA would be required for RFFDs having the potential to impact migratory birds and golden eagles, and would limit the impacts of these activities.

Greater Sage-Grouse

Reasonably foreseeable future disturbances within this CESA include mineral exploration (7,385 acres quantified) and utilities and infrastructure (325 acres quantified). Adding these quantified RFFAs to the past and present disturbances raises the disturbance to 56,243 acres, or 3.3 percent of the CESA.

Knick et al. (2013) used a model-based approach to evaluate ecological minimum requirements for distribution of Greater Sage-Grouse leks in the western U.S. (including a large portion of Nevada and the project area). Based on their modeling results, Knick et al. (2013) concluded, among other results, that 99 percent of sampled active Greater Sage-Grouse leks are located where surrounding landscapes are less than 3 percent developed/impacted. Adding the RFFAs and the proposed Gold Rock Mine Project to the existing disturbance in the CESA would raise

the level of disturbance above the 3 percent impact threshold, which may neutralize or reverse the increasing Greater Sage-Grouse population trend for the CESA. However, additional research is warranted to confirm the 3 percent threshold suggested by Knick et al. (2013) given that their study only evaluated lek data from 1998 to 2007.

RFFAs in the CESA may increase ambient noise levels, which may disturb Greater Sage-Grouse breeding, nesting, and brood rearing behavior. Direct mortalities, displacement and habitat fragmentation may also occur. Fragmentation effects within the CESA have not been quantified by the land management agencies as quantification is very difficult.

5.11.5 Cumulative Disturbances

General Wildlife

Of the 998,955 acres covered by the general wildlife CESA, 32,564 acres of disturbance are associated with past actions, present actions, and RFFAs, which is a disturbance of approximately 3 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 36,243 acres, or approximately 4 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,455 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 95 to 96 acres.

Wildlife displacement and habitat fragmentation from mineral development and exploration activities decreases survival and reproduction rates of affected individuals to some degree and increases competition. Implementation of the Proposed Action would potentially result in displacement of less mobile small mammals, predatory mammals, and reptiles and dispersal of wildlife and some forms of recreation (hiking, hunting, ATV use, etc.) from the Plan area and surrounding habitat into adjacent undisturbed areas. Displacement of some forms of recreation from the Proposed Action and alternatives has the potential to result in a cumulative effect to wildlife for the duration of the Proposed Action and alternatives.

Special Status Small Mammals and Fish

Of the 483,967 acres covered by the CESA for special status small mammals and fish, 10,615 acres of disturbance are associated with past actions, present actions, and RFFAs, which is a disturbance of approximately 2 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 14,294 acres, or approximately 3 percent of the CESA. This is an approximately 26 percent disturbance increase within the CESA. Direct disturbances to special status small mammals would be similar to those for general wildlife. There would be no direct disturbance to aquatic habitats under the Proposed Action.

Big Game

Of the 998,955 acres covered by the big game CESA, 32,564 acres of disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 3 percent of the CESA. A breakdown of disturbance acres to each individual big game CESA from past, present and RFFAs is provided below. In addition, the amount of increased disturbance from the Proposed Action is described below.

- Bighorn sheep: of the 1,744,450 acres covered by the bighorn sheep CESA, 39,761 acres of disturbance are associated with past, present, and RFAAs, which is a

disturbance of approximately 2 percent of the CESA. The Proposed Action is not anticipated to disturb any acres of bighorn sheep range in the CESA.

- Elk: of the 2,205,883 acres covered by the elk CESA, 57,601 acres of disturbance are associated with past, present, and RFAAs, which is a disturbance of approximately 3 percent of the CESA. The Proposed Action is not anticipated to disturb any acres of elk range in the CESA.
- Mule deer: of the 4,262,792 acres covered by the mule deer CESA, 157,520 acres of disturbance are associated with past, present, and RFAAs, which is a disturbance of approximately 3.7 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase disturbance within the CESA by 3,679 acres to approximately 161,199 acres, or approximately 3.8 percent of the CESA.
- Pronghorn antelope: of the 2,816,033 acres covered by the pronghorn antelope CESA, 54,600 acres of disturbance are associated with past, present, and RFAAs, which is a disturbance of approximately 1.9 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase disturbance within the CESA by 3,679 acres to approximately 58,084 acres, or approximately 2.1 percent of the CESA.

Implementation of the Proposed Action would potentially result in displacement of big game species, particularly mule deer and pronghorn antelope, from the project into adjacent, undisturbed areas. Displacement from other past, present, and RFFAs would also influence big game displacement from the CESA. Cumulative effects of displacement to big game could result in decreases in survival rates of affected individuals primarily through increased noise, habitat fragmentation and direct mortalities associated with collisions with vehicles. It is expected that any future management activities in the big game CESAs will meet standards and guidelines specifically developed to protect habitat for big game on public lands. These future management activities along with mitigation measures developed for the Proposed Action should help to limit cumulative effects to big game species due to habitat displacement, fragmentation, and vehicular collisions.

Migratory Birds and Golden Eagles

Impacts from cumulative disturbance on migratory birds and eagles would be similar to those described above for general wildlife and special status small mammals and fish. Of the 484,411 acres covered by the migratory bird and eagle CESA, 11,270 acres of disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 2.3 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 14,949 acres, or approximately 3.1 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,455 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 95 to 96 acres. All planned disturbance would take place in upland habitats; therefore, the Proposed Action would not increase cumulative disturbance to species that use riparian and wetland habitats, including the southwestern willow flycatcher and yellow-billed cuckoo.

The effects of past, present, and reasonably foreseeable future disturbances would be minimized with the implementation of the MBTA and BGEPA and associated pre-construction surveys and nest avoidance during the migratory bird breeding season. Impacts of cumulative surface disturbance would potentially result in fragmentation and loss of habitat within the area; however, these disturbances would affect a relatively small percentage of the CESA.

Greater Sage-Grouse

Of the 1,727,788 acres covered by the Greater Sage-Grouse CESA, 56,243 acres of disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 3.3 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 59,922 acres, or about 3.5 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,455 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 95 to 96 acres. The Proposed Action and alternatives would contribute additional, unquantified cumulative disturbance in the CESA due to habitat fragmentation, noise, and disturbance to individual Greater Sage-Grouse from human presence and activity.

5.11.6 Cumulative Effects

General Wildlife

Impacts to wildlife from past, present, and RFFA in conjunction with the Proposed Action or other action alternatives would result in cumulative displacement and habitat fragmentation. Cumulative effects of the Proposed Action combined with past, present and RFFAs would total approximately 3 percent of the CESA. Most of the disturbance resulting from the Proposed Action or other action alternatives would be reclaimed after mining operations are completed, reducing impacts to general wildlife.

Climate change may affect wildlife in the CESA through changes in habitat (or vegetation community type) or availability of water resources. As described in Section 5.10.6, average annual temperatures in east central Nevada are projected to rise by 2.5 to 3.5 degrees F by the years 2021 to 2050, and continue to rise by 5.5 to 6.5 degrees F by the years 2041 to 2070 and 7.5 to 8.5 degrees F by the years 2070 to 2099, based on a continued rise in GHG emissions (Garfin et al. 2014). Summer temperatures are projected to continue rising, and a reduction of soil moisture is projected for much of the western U.S. in summer (Walsh et al. 2014). Projections for White Pine County show an even longer period of reduced average monthly soil moisture, spanning from late spring through early winter (Alder and Hostetler 2014). More frequent wildfires are predicted to result in more frequent removal of existing vegetation communities and further reduce soil moisture in affected areas, providing more opportunities for invasive species such as annual grasses that would be more tolerant of warmer temperatures and lower moisture conditions. In time these invasive species could outcompete native perennial species in the CESA.

Provencher and Anderson modeled impacts to vegetation in Nevada assuming an average temperature rise of 3 degrees F over the next 30 years. The modeled projections show a shift in functional groups, where pinyon-juniper woodlands would shift toward sagebrush-dominated communities and sagebrush-dominated communities would shift toward salt desert scrub communities (Provencher and Anderson 2011). In addition to these changes, an increase in uncharacteristic vegetation types (vegetation that varies significantly from the reference condition due to anthropogenic disturbances) is expected in Great Basin Pinyon-Juniper Woodland, Great Basin Xeric Mixed Sagebrush Shrubland, and Intermountain Basins Big Sagebrush Shrubland, while ecological disturbance is likely to decrease in Inter-Mountain Basins Montane Sagebrush Steppe and Intermountain Basins Mixed Salt Desert Scrub (Provencher and Anderson 2011, Wildlife Action Plan Team 2012).

These changes in habitat could change the available forage and water resources for general wildlife within the CESA. The changes could benefit some wildlife species, such as habitat

generalists and those that use open, desert-scrub habitats, and adversely affect others, such as those that rely on mature shrub and woodland habitat types. Ultimately, wildlife community composition is likely to change as some species' populations decline and others increase.

While long-term climate observations and model predictions indicate continuous rise in temperature and global warming, scientists have found that climate trends are not adequately identified for periods of years but rather for periods of decades (Santer et al. 2011). In fact, climate trends may suggest cooling over that short a span of time while overall longer term projections show warming (Easterling et al. 2009). This contrast is likely due to superimposing human-induced warming on a naturally varying climate; therefore, the temperature rise has not been, and will not be, uniform or smooth across the country or over time (Walsh et al. 2014).

As such, projection of impacts to wildlife in the CESA due to climate change during the period of 10 years of mining and three years of reclamation under any of the action alternatives is difficult; however, changes in vegetation communities, amount of cover, or availability of water resources would have the potential to impact wildlife. It is expected that the extent of climate change impacts to wildlife would be similar across all alternatives. Under any of the action alternatives, the proponent would implement Applicant-Committed EPMs to minimize erosion and sedimentation throughout the life of the mine (from construction through reclamation) and would use a reclamation seed mixture approved by BLM that is appropriate for site conditions. To minimize spread of invasive plant species and therefore maximize availability of water for desired seeded species, no irrigation is proposed. Implementation of these measures is anticipated to minimize impacts to wildlife habitat due to climate change.

Special Status Small Mammals and Fish

Impacts to special status small mammals from past, present, and RFFA in conjunction with the Proposed Action or other action alternatives would be similar to those for general wildlife. The disturbance under the Proposed Action or other action alternatives combined with past actions, present actions, and RFFAs would total approximately 3 percent of the CESA. There would be no cumulative effects on fish under any alternative because no aquatic habitats would be impacted. Climate change could have impacts on special status small mammals within the CESA similar to those noted for general wildlife, including a change in available forage and water resources and altered community composition. In particular, dark kangaroo mouse, pale kangaroo mouse, and pygmy rabbit are noted as being vulnerable to climate change because populations are disjunct and patchy, vulnerable to elimination by wildfire, and may not be able to shift with shifting vegetation community types across their ranges (Wildlife Action Plan Team 2012).

While long-term climate observations and model predictions indicate continuous rise in temperate and global warming, scientists have found that climate trends are not adequately identified for periods of a few years or even a single decade but rather over a period of several decades (Santer et al. 2011). In fact, climate trends may suggest cooling over that short a span of time while overall longer term projections indicate warming (Easterling et al. 2009). This is likely due to human-induced warming being superimposed on a naturally varying climate; therefore, the temperature rise has not been, and will not be, uniform or smooth across the country or over time (Walsh et al. 2014).

As such, definite projection of impacts to CESA special status small mammals due to climate change during the period of 10 years of mining and three years of reclamation under any of the action alternatives is difficult; however, changes in vegetation communities, amount of cover, or availability of water resources would have the potential to impact special status small mammals. It is expected that the extent of climate change impacts to special status small mammals would

be similar across all alternatives. Under any of the action alternatives, the proponent would implement Applicant-Committed EPMs to minimize erosion and sedimentation throughout the life of the mine (from construction through reclamation) and would use a reclamation seed mixture approved by BLM that is appropriate for site conditions. To minimize spread of invasive plant species and therefore maximize availability of water for desired seeded species, no irrigation is proposed. Implementation of these measures is anticipated to minimize impacts to special status small mammal habitat due to climate change.

Big Game

Impacts from past, present, and RFFA in conjunction with the Proposed Action to big game, particularly mule deer and pronghorn antelope, could result in cumulative short-term effects including increased mortalities from vehicle collisions or displacement due to noise and human activity, and would result in cumulative long-term effects such as habitat loss and habitat fragmentation. Cumulative effects to big game from habitat loss and alteration are expected to be long-term because the habitat changes associated with the project would be long-term (extending beyond the 13-year mine life). Though the mine site would be re-vegetated after mining, it would take many years for the vegetation to recover to its baseline condition.

Cumulative effects to big game because of direct surface disturbance under the Proposed Action combined with past, present, and RFFAs would only be approximately 3.8 percent of the mule deer CESA and 2 percent of the pronghorn antelope CESA (note, the Proposed Action is not anticipated to directly impact bighorn sheep or elk ranges within their respective CESAs). In addition, the surface disturbance to big game CESAs resulting from the Proposed Action would mostly be reclaimed after mining operations are completed which would help to reduce impacts over the long-term as vegetation communities recover.

The cumulative effects to big game under the Modified County Road Re-Route, Northern Power Line Route, Southern Power Line Route, NW Main Access Route, and Western Tailings Storage Facility alternatives would be similar as those described above for the Proposed Action with the following exceptions:

- Northern Power Line Route: this alternative would disturb 16 fewer acres of pronghorn antelope range and 21 fewer acres of mule deer range in the CESAs.
- Southern Power Line Route: this alternative would disturb 17 fewer acres of pronghorn antelope range and 22 fewer acres of mule deer range in the CESAs.
- NW Main Access Route Alternative, Northern Power Line Route: this alternative would disturb 57 more acres of pronghorn antelope range and 32 more acres of mule deer range in the CESAs.
- NW Main Access Route Alternative, Southern Power Line Route: this alternative would disturb 66 more acres of pronghorn antelope range and 41 more acres of mule deer range in the CESAs.
- Modified County Road Re-Route: this alternative would disturb one less acre of pronghorn antelope range and 1 less acre of mule deer range in the CESAs.
- Western Tailings Storage Facility: this alternative would disturb 139 fewer acres of pronghorn antelope range and 353 fewer acres of mule deer range in the CESAs.

Climate change could have impacts similar to those noted for general wildlife, including a change in available forage and water resources and altered community composition for big game.

Because big game are highly mobile, wide-ranging species, they may be able to adapt to shifting locations of optimum plant communities; however, climate change may affect the distribution and migratory behavior of populations. Locations of crucial ranges may shift upward in elevation and big game may be required to alter migration routes to reach forage and water resources. Decreased severity of winters and snowpack could benefit big game populations by reducing winter mortality; however, drought could reduce the availability of forage and have the opposite effect (Sherrill et al. 2015).

Predicted climate changes are based on long term modeled estimates and continued increase of GHG emissions. Projection of impacts to big game in the CESA due to climate change during the 10-year life of mine and three-year reclamation life under any of the action alternatives is difficult; however, changes in vegetation communities, amount of cover, or availability of water resources would have the potential to impact big game. It is expected that the extent of climate change impacts to big game would be similar across all alternatives. Under any of the action alternatives, the proponent would implement Applicant-Committed EPMs to minimize erosion and sedimentation throughout the life of the mine (from construction through reclamation) and would use a reclamation seed mixture approved by BLM that is appropriate for site conditions. To minimize spread of invasive plant species and therefore maximize availability of water for desired seeded species, no irrigation is proposed. Implementation of these measures is anticipated to minimize impacts to big game habitat due to climate change.

Migratory Birds and Golden Eagles

Impacts to migratory birds and eagles from past, present, and RFFA in conjunction with the Proposed Action or other action alternatives would result in similar impacts as described for general wildlife and special status small mammals and fish, including cumulative habitat loss. Cumulative effects resulting from the Proposed Action or other action alternatives combined with past, present and RFFAs would total approximately 3 percent of the CESA. The disturbance resulting from the Proposed Action or other action alternatives would mostly be reclaimed after mining operations are completed, reducing impacts to migratory bird and eagle habitat. There would be no cumulative effects on the southwestern willow flycatcher or yellow-billed cuckoo under the Proposed Action or other action alternatives.

Climate change is also anticipated to impact migratory birds within the CESA. Statewide, sagebrush-obligate species such as Brewer's sparrow, sage sparrow, and sage thrasher are anticipated to decline due to shifts in sagebrush communities to drier salt desert scrub communities, increased fire frequency, and increased prevalence of annual grasses (Provencher and Anderson 2011; Wildlife Action Plan Team 2012; GBBO 2012). Climate-related reductions in birds' breeding ranges across Nevada are predicted to range from 15 to 98 percent, including a 77 percent reduction for the Brewer's sparrow and an 86 percent reduction for the sage thrasher by 2080 (National Audubon Society 2015). Golden eagles are anticipated to have a 79 percent summer range reduction and a 23 percent winter range reduction in Nevada by 2080 (National Audubon Society 2015).

Predicted climate changes are based on long term modeled estimates and continued increase of GHG emissions. Projection of impacts to wildlife in the CESA due to climate change during the 10-year life of mine and three-year reclamation life under any of the action alternatives is difficult; however, changes in vegetation communities, amount of cover, or availability of water resources would have the potential to impact migratory birds and golden eagles. It is expected that the extent of climate change impacts to migratory birds and golden eagles would be similar across all alternatives. Under any of the action alternatives, the proponent would implement Applicant-Committed EPMs to minimize erosion and sedimentation throughout the life of the mine (from

construction through reclamation) and would use a reclamation seed mixture approved by BLM that is appropriate for site conditions. To minimize spread of invasive plant species and therefore maximize availability of water for desired seeded species, no irrigation is proposed. Implementation of these measures is anticipated to minimize impacts to migratory birds and golden eagle habitat due to climate change.

Greater Sage-Grouse

Quantified disturbance associated with past and present activities and RFFAs would impact approximately 3.3 percent of the Greater Sage-Grouse CESA, raising disturbance above the 3 percent impact threshold suggested by Knick et al. (2013). The Proposed Action or other action alternatives would disturb approximately 0.2 percent of the CESA. Direct disturbance associated with the Proposed Action or other action alternatives combined with past, present and RFFAs would total approximately 3.5 percent of the CESA. If, as Knick et al. (2013) suggest, keeping impacts below 3 percent is necessary for maintaining a stable population, the Proposed Action has the potential to contribute to a downward population trend in the CESA.

Additional, unquantifiable impacts to Greater Sage-Grouse would result from factors such as climate change (which cannot be quantified at the scale of the CESA) and unquantifiable indirect impacts from past, present, and RFFAs. Impacts from past, present, and RFFA in conjunction with the Proposed Action or other action alternatives would result in cumulative displacement, habitat alteration, and habitat fragmentation. Potential impacts associated with increased ambient noise levels from past, present, and RFFAs in combination with the Proposed Action could contribute to chronic stress among individual Greater Sage-Grouse and declines in lek attendance near noisy areas (Blickley et al. 2012a,b). Other alternatives to the Proposed Action were developed that would minimize noise impacts to Greater Sage-Grouse due to project-related traffic.

Copeland et al. (2013) modeled the relationship between oil well and wind turbine density and male Greater Sage-Grouse population decline in Wyoming. Based on their model, the Greater Sage-Grouse population initially declines relatively quickly as more wells/wind turbines are added to the landscape, and the rate of decline slows when these features approach three per square kilometer (Copeland et al. 2013). Because this unreplicated correlation study was based on data for Wyoming and did not take into account features such as roads, power lines, and mining infrastructure, it is not directly applicable to the region where the project is located. However, it is informative of the potential Greater Sage-Grouse population decline that could occur from cumulative habitat fragmentation as more anthropogenic features are added to the landscape.

Throughout the CESA, future management activities must meet standards and guidelines specifically developed to protect habitat for Greater Sage-Grouse on public lands, thus future management activities should result in relatively few cumulative effects to this species via habitat losses and displacement compared to past activities. In addition, mitigation is required or requested for new projects on public land to offset Greater Sage-Grouse habitat losses, which reduces the overall impact to Greater Sage-Grouse in the CESA. Disturbance resulting from the Proposed Action or other action alternatives would mostly be reclaimed after mining operations are completed, reducing the long-term impact to Greater Sage-Grouse habitat and helping to minimize cumulative effects. In addition, mitigation measures would be implemented as described in Section 4.9.12 to offset the impacts of the project on Greater Sage-Grouse.

The cumulative effects to Greater Sage-Grouse under the Northern and Southern Power Line Route alternatives would be less than those under the Proposed Action, as these alternatives would result in fewer direct and indirect impacts to Greater Sage-Grouse habitat compared with the Proposed Action. However, whether the Proposed Action or other action alternatives are

included or not, cumulative disturbance from past and present activities and RFFAs in the CESA would still exceed the 3 percent impact threshold suggested by Knick et al. (2013).

Climate change is predicted to result in increased fire frequency in shrubland habitats, contributing to the proliferation and spread of invasive grasses such as cheatgrass, which would be detrimental to Greater Sage-Grouse habitat (National Fish, Wildlife, and Plants Climate Adaptation Partnership 2012). Provencher and Anderson modeled impacts to vegetation in Nevada assuming an average temperature rise of 3 degrees F over the next 30 years. The modeled projections show a shift in functional groups, where pinyon-juniper woodlands would shift toward sagebrush-dominated communities and sagebrush-dominated communities would shift toward salt desert scrub communities. The exact extent of the potential impacts from climate change is uncertain and cannot be quantified at the local scale of the CESA. Across its range, the Greater Sage-Grouse is predicted to lose approximately 71 percent of its breeding range and 92 percent of its non-breeding range by 2080 due to climate change (National Audubon Society 2015).

While long-term climate observations and model predictions indicate continuous rise in temperature and global warming, scientists have found that climate trends are not adequately identified for periods of a few years or even a single decade but rather over a period of several decades (Santer et al. 2011). In fact, climate trends may suggest cooling over that short a span of time while overall longer term projections indicate warming (Easterling et al. 2009). This contrast is likely due to superimposing human-induced warming on a naturally varying climate; therefore, the temperature rise has not been, and will not be, uniform or smooth across the country or over time (Walsh et al. 2014).

As such, definite projection of impacts to Greater Sage-Grouse in the CESA due to climate change during the period of 10 years of mining and three years of reclamation under the Proposed Action or other action alternatives is difficult; however, changes in vegetation communities, amount of cover, or availability of water resources would have the potential to impact Greater Sage-Grouse. It is expected that the extent of climate change impacts to Greater Sage-Grouse would be similar across all alternatives. Under any of the action alternatives, the proponent would implement Applicant-Committed EPMs to minimize erosion and sedimentation throughout the life of the mine (from construction through reclamation) and would use a reclamation seed mixture approved by BLM that is appropriate for site conditions. To minimize spread of invasive plant species and therefore maximize availability of water for desired seeded species, no irrigation is proposed. Implementation of these measures is anticipated to minimize impacts to Greater Sage-Grouse habitat due to climate change.

5.12 RANGE RESOURCES

5.12.1 CESA Boundary

The CESA boundary for range resources includes the full extent of the Duckwater Allotment, Monte Cristo Allotment, South Pancake Allotment and Six-Mile Allotment, as well as the Eighteen Mile House grazing use area and South Newark pasture in the Newark allotment. The total area of this CESA is 969,208 acres of BLM and privately controlled lands (Figure 5.12-1). This CESA boundary was chosen because it encompasses the allotments and the permitted range uses that are associated with the Proposed Action.

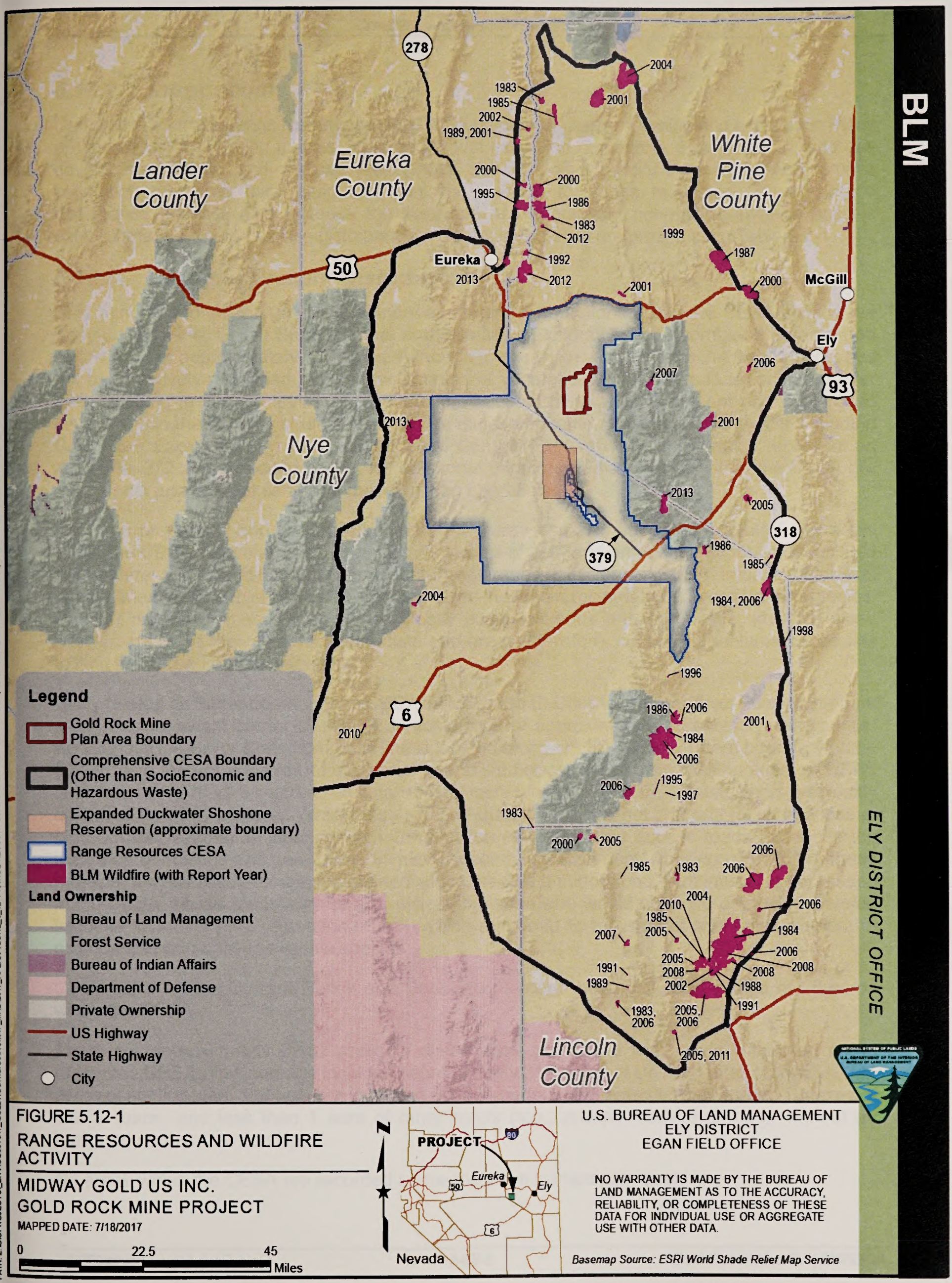


FIGURE 5.12-1

RANGE RESOURCES AND WILDFIRE ACTIVITY

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 7/18/2017

0 22.5 45 Miles

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.

Basemap Source: ESRI World Shade Relief Map Service

PATH: Z:\GIS\PROJECTS_ENV\CG0001617_GOLDROCK\GIS\ARCMAP_MXD\2017_AFEIS\FIGURE_5_12-1 RANGE RESOURCES AND WILDFIRE ACTIVITY.MXD | LAST SAVED BY: MESTEFANOS | LAST SAVED ON: 7/18/2017 6:16:10 PM

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5.12.2 Introduction

Cumulative effects to range resources in the CESA primarily occur from mining and exploration Plans of Operations, exploration notices, sand and gravel extraction operations, utility lines, oil and gas development, roads, and wildland fires. These activities often modify landscapes and remove vegetation resources that would otherwise be available for range resources. These surface disturbance activities also increase the likelihood of noxious and non-native, invasive species establishment. Areas of surface disturbance in the sections below are presented in Table 5.2-1.

5.12.3 Past and Present Disturbances

Past mineral and oil and gas development and exploration actions within the CESA include the Easy Junior Mine, Green Springs Mine, and Pan Mine Exploration for a combined unreclaimed disturbance of approximately 409 acres. Although the acreage associated with these projects has not been actively reclaimed, natural reclamation of vegetation species has likely occurred over time resulting in various levels of revegetation. Present mineral development and exploration actions within the CESA include several active mines and mineral exploration projects, including Gold Rock Exploration Project and Cathedral Canyon Exploration Project, which represent an additional 272 acres of disturbance. An additional 94 acres of disturbance within the CESA are due to past and present sand and gravel mining operations.

Past and present oil and gas development in the area has also impacted a total of 119 acres within the CESA. There are approximately 894 acres of past and present disturbance associated with mineral and oil and gas development and exploration activities the CESA. Impacts of mineral development and exploration can be long-term; however reclamation of vegetation species, whether natural or man-made, will eventually occur. Noxious and non-native, invasive weed species are more likely to establish in disturbed areas; therefore, successful reclamation assists to limit the spread of these species.

Utility related disturbance with in the CESA includes the El Dorado to Farm Area Power Line runs along the northwest corner of the CESA for a total of approximately 15 acres of disturbance. Additionally the Silver State fiber optic line is located along US 50 at the northern boundary of the CESA for a total of 80 acres of additional past disturbance. Other transmission lines on USFS land have disturbed 64 acres. A total of 159 acres within the CESA have been previously disturbed for utility projects. While these types of disturbances do not typically result in a loss of land access, vegetation clearing from construction of utilities and access roads increases the likelihood of noxious and non-native, invasive species establishment. After construction of these projects, access roads remain maintained which creates a minor, long-term impact to vegetation in the CESA. These roads may be also utilized by those who would not have otherwise traveled to these locations (i.e., recreational use), which may lead to the spread and establishment of noxious and non-native, invasive species.

Construction of the Currant Ranch and Duckwater airports have disturbed a total of 28 acres within the CESA.

There are approximately 9,482 acres of disturbance associated with roads within the range resources CESA. This acreage includes approximately 316 acres of United States highways, 347 acres of state routes, 518 acres of local and county roads, 8,288 acres of BLM roads, 13 acres of USFS roads, and less than 1 acre of other roads (e.g., private roads and roads without an assigned name or ownership).

No areas within the CESA are recorded as having been burned previously.

5.12.4 Reasonably Foreseeable Future Disturbances

Foreseeable future disturbances within the CESA include approximately 15 acres of disturbance from the Centennial-Seligman Access Road Right-Of-Way; 3,301 acres of proposed disturbance from the Pan Mine Project; less than one acre associated with the proposed Strawberry 69kV Transmission line; and approximately 152 acres from the Pan Mine Southwest Power Line Route. Disturbance as a result of these proposed activities will remove approximately 3,469 acres from utilization by range resource use.

The amount of wildland fire that could occur within the reasonably foreseeable future within the CESA is unknown and not quantifiable; therefore, it was not considered for this analysis.

5.12.5 Cumulative Disturbances

Grazing would be postponed within the Proposed Action footprint until full reclamation of the disturbed areas occurs and land managers agree that the reclamation is suitable for range resource use. In the event of a wildland fire that is determined to have been caused by activities associated with construction or operation of the Gold Rock Mine Project, Midway would reclaim burned areas in coordination with the appropriate local, state or federal agencies.

The CESA for range resources is 969,208 acres of BLM and privately controlled lands; the calculated carrying capacity of this area is approximately 24,230 AUMs based on a ratio of one AUM/40 acres. Of the total 969,208 acres covered by the CESA, approximately 14,032 acres of surface disturbance, with a carrying capacity of 351 AUMs, are associated with known and quantifiable past, present, and RFFAs, which is a disturbance of approximately 1 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the surface disturbance within the CESA by 3,679 acres and an additional 92 AUMs, to approximately 18,617 acres, or approximately 2 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,455 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 95 to 96 acres.

The amount of surface disturbance may or may not directly relate to impacted AUMs. In addition to direct impacts to vegetation and loss of range resource, impacts to range resources can include exclusion of grazing area from public access. Based on the analysis conducted in Section 4.10 approximately 9,300 acres of rangelands, including the 267 acres of exploration identified as a present action in this cumulative effects analysis, would be impacted by the Proposed Action. Based on this area, a total of 232 AUM would be lost. However, this area of impact includes the 8,757-acre fenced mine area. In the short-term, the fence would exclude livestock grazing. The fencing would be removed during the closure process, and access to range resources would be re-established.

Information was not available to directly compare range specific impacts from all alternatives in combination with past actions, present actions, and RFFAs across the CESA.

Reclamation and continued monitoring until successful establishment of vegetation species would result in improved range resources. Livestock grazing on the five allotments within the CESA would continue to occur into the reasonably foreseeable future.

5.12.6 Cumulative Effects

Range resources and vegetation community types are common and widespread throughout the CESA. Vegetation resources would be restored after successful reclamation.

Cumulative effects to range resources under the Northern Power Line Alternative and Southern Power Line Alternative would both be approximately 33 acres less than those due to the Proposed Action. For the Northwest Main Access Route Alternative cumulative impacts to range resources would be approximately 41 acres more than the Proposed Action. Cumulative effects to range from the Modified County Road Re-Route Alternative would be approximately the same as the Proposed Action. The additional disturbance of up to 41 acres (or one AUM) of rangelands due to construction and maintenance of the power lines and associated roads under these alternatives would not significantly increase the impact to range resources when compared to the Proposed Action.

The cumulative effects to range resources under the Western Tailings Facility Alternative would be the same as those under the Proposed Action, with the exception that it would disturb 153 fewer acres. This is a reduction of about 4 percent when compared to the expected impacts to range from the Proposed Action and would not significantly decrease the impacts to rangelands.

Cumulative effects to rangeland resources under the No Action Alternative would include 267 acres of previously authorized disturbance within the project area.

Climate change may affect range resources in the CESA. The primary impact to range resources would be a shift the distribution of vegetation types throughout the CESA. A climate change-associated increase in fire frequency would also have the potential to impact vegetation and thereby range resources.

While long-term climate observations and model predictions indicate continuous rise in temperature and global warming, scientists have found that climate trends are not adequately identified for periods of a few years or even a single decade but rather over a period of several decades (Santer et al. 2011). In fact, climate trends may suggest cooling over that short a span of time while overall longer term projections indicate warming (Easterling et al. 2009). This contrast is likely due to superimposing human-induced warming on a naturally varying climate; therefore, the temperature rise has not been, and will not be, uniform or smooth across the country or over time (Walsh et al. 2014).

As such, definitive projection of the exact type and timing of any climate change vegetation shift and specific impacts to range resources in the CESA due to climate change during the period of 10 years of mining and three years of reclamation under any of the action alternatives is difficult; however, changes in soil moisture, vegetation communities, amount of forage cover, availability of water resources and frequency of wildfire would have the potential to impact range resources. It is expected that the extent of climate change impacts to range resources would be similar across all alternatives. Under any of the action alternatives, climate change impacts to range resources (vegetation) would be mitigated through Applicant-Committed EPMs, the use of appropriate reclamation seed mixtures, and targeted practices to minimize spread of invasive plant species; are all anticipated to minimize impacts to project-related range resources due to climate change.

5.13 FOREST PRODUCTS AND FUELS

5.13.1 CESA Boundary

The CESA boundary for forest products and fuels includes is shown on Figure 5.5-1 and is the same as the water resources CESA. The total area of this CESA is 483,967 acres. This CESA boundary was chosen because cumulative effects to forest products and fuels would be limited to this area.

5.13.2 Introduction

Disturbance within the forest products and fuel CESA primarily includes mining and exploration, exploration notices, sand and gravel extraction operations, utility lines, oil and gas development, roads, and wildland fires. Disturbance associated with these actions involves vegetation clearing, which reduces forest product availability and access and fuel availability. Forest types within the CESA are common and widespread throughout Nevada. Areas of surface disturbance in the sections below are presented in Table 5.2-1.

5.13.3 Past and Present Disturbances

Past mineral development and exploration actions within the CESA includes the Easy Junior Mine, Mount Hamilton Mine, Green Springs Mine, and Pan Project exploration for a combined surface disturbance of approximately 796 acres. Although these projects have not actively been reclaimed, natural reclamation of vegetation species may have occurred over time resulting in various levels of revegetation. Present mineral development and exploration actions within the CESA include several active mines and mineral exploration projects, including Centennial Exploration Project, Gold Rock Exploration Project, Wheeler Ridge Exploration Project, and Cathedral Canyon Exploration Project, which represent an additional 349 acres of disturbance. Finally, an additional 139 acres of disturbance within the CESA are due to past and present sand and gravel mining operations.

In summary, approximately 1,145 acres of past and present surface disturbance has occurred during mineral development and exploration activities the CESA. In addition to mineral development approximately 6 acres within the CESA have been disturbed for oil and gas development. Impacts of mineral and oil and gas development and exploration can be long-term. Although reclamation of vegetation species will eventually occur, forest areas disturbed by these actions may be permanently altered.

Utility related disturbance with in the CESA includes the El Dorado to Farm Area Power Line which runs along the northwest corner of the CESA for a total of approximately 53 acres of disturbance. Additionally the Silver State fiber optic line is located along US 50 at the northern boundary of the CESA for a total of 18 acres of additional past disturbance. A total of 71 acres within the CESA have been previously disturbed for utility projects. While these types of disturbances do not typically result in a loss of land access, vegetation clearing from construction of utilities and access roads increases the likelihood of noxious and non-native, invasive species establishment. After construction of these projects, access roads remain maintained. These roads may be also used by those who would not have otherwise traveled to these locations (i.e., recreational use), which may lead to the spread and establishment of noxious and non-native, invasive species and provide access to previously inaccessible forest products.

There are approximately 4,814 acres of disturbance associated with roads within the CESA (Table 5.2-1). Establishment of roads effects forest products and fuels for the long-term. Noxious and

non-native, invasive species are typically the first species to establish, especially along road corridors and where vehicles travel off road. Off-road areas disturbed by vehicles are often slower to reestablish because the soils have been compacted. Vehicles that travel off road spread seeds of noxious and non-native, invasive species. Roads create access into areas that might not otherwise be accessible. This increases the risk of off- highway vehicle use which has a greater likelihood for limiting the possibilities for forest reestablishment.

Approximately 577 acres of the CESA has previously burned as a result of wildland fire. Burned areas result in patched landscapes that create natural fire breaks and diversify habitat for wildlife; however, burned landscapes often become dominated by noxious and non-native, invasive species. Burned areas represent a natural means of fuel reduction.

5.13.4 Reasonably Foreseeable Future Disturbances

Foreseeable future disturbances within the CESA include approximately 75 acres of disturbance associated with Green Springs Mineral Exploration Project; approximately 195 acres of exploration associated with the Centennial-Seligman Mining and Exploration Project and approximately 15 acres related to the access road right-of-way; approximately 3,301 acres associated with the Pan Project; 4 acres associated with the Griffon Mine Exploration Project, and 1 acre associated with the Strawberry 69kV transmission line. Disturbance as a result of these proposed activities would likely result in removal of 3,590 acres of vegetation.

The amount of wildland fire that could occur within the reasonably foreseeable future within the CESA is unknown and not quantifiable; therefore, it was not considered for this analysis.

5.13.5 Cumulative Disturbances

The CESA for forest products and fuels is approximately 483,967 acres of BLM, USFS, and privately-controlled lands. Of the 483,967 acres covered by the CESA, approximately 10,615 acres of disturbance are associated with past, present, and RFFAs, which is a surface disturbance of approximately two percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the surface disturbance within the CESA by 3,679 acres to approximately 14,294 acres, or approximately 3 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,455 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 95 to 96 acres.

The amount of surface disturbance may or may not directly relate to impacted forest product collection. In addition to direct impacts to vegetation and loss of forest product resource, impacts to forest products can include exclusion of forest product areas from public access. Within the fenced mine area, approximately 2,628 acres of land support pinyon-juniper woodland communities, which can provide forest products. In the short-term, the fence would exclude the forest products within the fenced area from public access. The fencing would be removed during the closure process, and access to forest products would be re-established.

Information was not available to directly compare forest product or fuels specific impacts across the CESA. However, the area of vegetation communities can be compared. Vegetation communities in the CESA include approximately 136,748 acres of Great Basin pinyon-juniper woodland communities. Under the Proposed Action or alternatives (including the 267 acres of Gold Rock exploration identified as a present action in this cumulative analysis), up to 2,650 acres of Great Basin pinyon-juniper woodland communities could be impacted through direct impacts to vegetation outside the fenced mine area, or through exclusion by mine area fencing. These

potential impacts could affect approximately two percent of the Great Basin pinyon-juniper woodland communities in the CESA.

With regard to other past actions, present actions, and RFFAs, the existing 4.2-acre permitted commercial fuelwood harvesting area represents less than 0.01 percent of the commercial fuelwoodpermit areas currently granted within the CESA. The existing 1,220-acre permitted commercial pine nut collection area represents approximately nine percent of the current permitted commercial pine nut collection areas within the CESA.

5.13.6 Cumulative Effects

Considering past, present, and RFFA disturbances in the forest products and fuels CESA combined with the Proposed Action, cumulative effects to forest product and fuel resources could include surface disturbance, loss of vegetation and therefore loss of forest resource, and displacement of some types of activities, such as the collection of forest products. For those projects with a federal nexus, reclamation and continued monitoring until successful establishment of vegetation species within disturbed areas would result in improved vegetation composition, limit the spread and establishment of noxious and non-native invasive species, and reduce erosion potential within the CESA.

Cumulative effects to forest product resources under the Northern Power Line Alternative and Southern Power Line Alternative would both be approximately 16 acres and 20 acres less than those due to the Proposed Action, respectively. For the Northwest Main Access Route Alternative cumulative impacts to forest product resources would be less than one acre more than the Proposed Action for the North option and 7 acres less for the South option. Cumulative effects to vegetation from the Modified County Road Re-Route Alternative would be approximately the same as the Proposed Action. The additional disturbance of up to 7 acres of forest products due to construction and maintenance of the power lines and associated roads under these alternatives would not significantly increase the impact to forest products resources when compared to the Proposed Action.

The cumulative effects to forest product resources under the Western Tailings Facility Alternative would be the same as those under the Proposed Action, with the exception that it would disturb 147 fewer acres of potential forest products. This is a reduction of about 19 percent when compared to the expected impacts to forest products from the Proposed Action and would not significantly decrease the impacts to forest products.

Cumulative effects to fuel resources under the Northern Power Line Alternative and Southern Power Line Alternative would both be approximately 47 tons and 57 less than those due to the Proposed Action, respectively. For the Northwest Main Access Route Alternative cumulative impacts to fuel resources would be 3.5 tons more than the Proposed Action for the North option and 18 tons less for the South option. Cumulative effects to vegetation from the Modified County Road Re-Route Alternative would be approximately the same as the Proposed Action. The additional disturbance of up to 3.5 tons of fuel resources due to construction and maintenance of the power lines and associated roads under these alternatives would not significantly increase the impact to fuel resources when compared to the Proposed Action.

The cumulative effects to fuel resources under the Western Tailings Facility Alternative would be the same as those under the Proposed Action, with the exception that it would disturb 233 fewer tons of potential fuels. This is a reduction of about 20 percent when compared to the expected impacts to fuels from the Proposed Action and would not significantly decrease the impacts to fuels.

Cumulative effects to forest product and fuel resources under the No Action Alternative would include 267 acres of previously authorized disturbance within the project area.

Climate change may affect forest products and fuels within the CESA. Based on vegetation mapping and climate change modeling for Nevada, there will be a general shift in areas of pinyon-juniper woodland towards the various sagebrush-dominated ecological systems. In turn, these sagebrush ecological systems will tend to shift towards salt desert scrub communities (Provencher and Anderson 2011). Such changes could result in a reduction in availability of forest products. Additional changes to precipitation could also produce a dramatic increase in wood expansion which would result in a corresponding increase in fuel load (Neilson, 2005).

In addition to these changes, an increase in uncharacteristic vegetation types (vegetation that varies significantly from the reference condition and are caused by anthropogenic disturbances) is expected in some vegetation communities, while ecological disturbance is likely to decrease in others (Provencher and Anderson 2011, Wildlife Action Plan Team 2012). A climate change-associated increase in fire frequency will also have the potential to impact forest products and fuels.

While long-term climate observations and model predictions indicate continuous rise in temperature and global warming, scientists have found that climate trends are not adequately identified for periods of a few years or even a single decade but rather over a period of several decades (Santer et al. 2011). In fact, climate trends may suggest cooling over that short a span of time while overall longer term projections indicate warming (Easterling et al. 2009). This contrast is likely due to superimposing human-induced warming on a naturally varying climate; therefore, the temperature rise has not been, and will not be, uniform or smooth across the country or over time (Walsh et al. 2014).

As such, definitive projection of the exact type and timing of any vegetation shifts and the associated impacts on fuels and specific impacts to forest products and fuels in the CESA due to climate change during the period of 10 years of mining and three years of reclamation under any of the action alternatives is difficult; however, changes in soil moisture, vegetation communities, and frequency of wildfires could impact forest products and fuels. The expected extent of climate change impacts to forest products and fuel resources will be similar across all alternatives. Under any of the action alternatives, climate change impacts to vegetation would be mitigated through Applicant-Committed EPMs, the use of appropriate reclamation seed mixtures, and targeted practices to minimize spread of invasive plant species; are all anticipated to minimize impacts to project-related vegetation due to climate change.

5.14 WILD HORSES

5.14.1 CESA Boundary

The CESA for wild horses is the Pancake Herd Management Area (HMA), the Sand Springs West HMA, and the Monte Cristo Wild Horse Territory (WHT) (Figure 5.5-1). The total area for this CESA is 1,097,208 acres of land.

5.14.2 Introduction

Cumulative effects to wild horses in the CESA primarily occur from mining and exploration activities, utility lines, roads, and wildfires. These activities often modify landscapes and remove vegetation resources that would otherwise be available for wild horse use. These disturbance activities also increase the likelihood of noxious and non-native, invasive species establishment which reduces the amount of available forage vegetation. Acres of disturbance in the sections below are presented in Table 5.2-1.

5.14.3 Past and Present Disturbances

Past and present disturbances within the CESA total approximately 11,138 acres. Past and present mineral development and exploration projects within the CESA include the Easy Junior Mine, the Mount Hamilton Mine, Gold Rock Exploration, Green Springs Mine, Wheeler Ridge Exploration Project, Green Springs Mineral Exploration Project, Pan Mine Exploration Project, and the Cathedral Canyon Exploration Project. Extraction and exploration of mineral resources directly displaces prime farmlands. Vegetation clearing activities increase the likelihood of erosion. Increased human activity has the ability to compact soils.

There are approximately 84 acres of disturbance associated with sand and gravel operations and approximately 55 acres of disturbance associated with oil and gas development projects within the CESA. In addition, there are approximately 9,534 acres of disturbance associated with roads within the CESA (Table 5.2-1). Disturbances associated with these actions increase the likelihood of spreading noxious and non-native invasive species. These species reduce the amount of usable range and available forage.

Extraction and exploration of mineral resources directly removes vegetation from lands that could be used as cover and forage for wild horse use. Vegetation clearing activities increase the likelihood of spreading noxious and non-native invasive species. These species can further reduce the amount of available forage. Noise and increased human activity has the ability to displace wild horse herds into adjacent areas.

5.14.4 Reasonably Foreseeable Future Disturbances

Foreseeable future disturbances within the CESA include the Pan Mine Project, the Centennial-Seligman Mining and Exploration Project, the Green Springs Mineral Exploration Project, the Nekekim Mining Project, and the Strawberry 69 kV Transmission Line, for a total of approximately 3,655 acres. Disturbance as a result of these proposed activities would likely remove 3,655 acres of forage for wild horses.

5.14.5 Cumulative Disturbances

The CESA for wild horses (1,097,208 acres) is nearly entirely comprised of BLM and USFS lands (1,096,997 acres). The remaining 211 acres are privately held. Of the total acreage within the CESA, approximately 14,938 acres of disturbance are associated with past, present, or RFFAs, which is a disturbance of approximately 1 percent of the CESA.

Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance of horse habitat within the CESA by 3,679 acres to approximately 18,617 acres, or about 2 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,455 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 95 to 96 acres.

In addition to direct impacts to vegetation and loss of wild horse resources, impacts to wild horse resources can include exclusion of grazing area from access. Based on the analysis conducted in Section 4.12 approximately 9,260 acres of lands within the CESA, including the 267 acres of exploration disturbance identified as a present action in this cumulative effects analysis, would be impacted by the Proposed Action. However, this area of impact includes the 8,757-acre fenced mine area. In the short-term, the fence would exclude horses from using this area. The fencing

would be removed during the closure process, and access for wild horses would be re-established.

5.14.6 Cumulative Effects

Cumulative impacts to wild horse resources from past actions, present actions, and RFFAs, and all of the action alternatives could include modification of landscapes, removal or reduction of forage resources, or the spread of noxious or non-native invasive weeds that could diminish forage resources. Reclamation and continued monitoring until successful establishment of vegetation species within the disturbed areas associated with the past actions, present actions, and RFFAs would result in improved range resources.

Under the Proposed Action, wild horses could be affected directly by displacement of horse habitat by mine infrastructure, mining disturbances that result in the removal of cover and forage vegetation, automobile or truck collisions, and disturbances associated with increased human activity and noise. Cumulative effects to wild horses under the Proposed Action would include the loss of forage and displacement of wild horse habitat within the 8,757-acre fenced portion of the Plan area for the life of the mine.

For those areas not reclaimed, permanent impacts would be long term. Less than 0.3 percent of the wild horse habitat within the CESA would be displaced. The displaced forage is comprised of vegetation community types are common and widespread throughout the area. Although the Proposed Action would displace a small percentage of the available wild horse habitat, wild horses are currently stressed as a result of insufficient forage and water within the existing HMAs and WHT. It is anticipated that managing the numbers of wild horse to maintain horse populations within the AML would minimize potential conflicts between mine activities and wild horses within the analysis area. If wild horse populations are maintained within the AML, wild horses would likely have sufficient available forage throughout the remainder of the combined total of approximately 1.1 million acres within the Pancake and Sand Springs HMAs and the Monte Cristo WHT.

Wild horse displacement would be temporary and vegetation resources would be restored after successful reclamation. It is anticipated that managing wild horses within the AML would minimize the potential for direct conflicts between mine activities and wild horses within the Plan area.

An increase in traffic associated with the Proposed Action and other reasonably foreseeable future actions could increase the likelihood of vehicle collisions on the access roads, thus possibly increasing the probability of horse injuries or mortalities. Implementation of EPMs or BMPs would minimize long-term effects to wild horses.

Cumulative effects to wild horses under the Northern Power Line Alternative would be the same as those under the Proposed Action, with the exception that it would disturb approximately 33 fewer acres of wild horse habitat.

Cumulative effects to wild horses under the Southern Power Line Alternative would be the same as those under the Proposed Action, with the exception that it would disturb approximately 31 fewer acres of wild horse habitat.

The cumulative effects to wild horses under the Northwest Main Access Route Alternative would be similar to those under the Proposed Action, with the exception that it would disturb approximately 47 (Northern Power Line Route) or 53 (Southern Power Line Route) additional acres of wild horse habitat.

Cumulative effects to wild horses under the Modified County Road Re-Route Alternative would be the same as those under the Proposed Action.

Cumulative effects to wild horse under the Western Tailings Storage Facility would be similar to those under the Proposed Action, with the exception that the fenced area would be smaller (7,049 acres); therefore, approximately 1,708 fewer acres of wild horse habitat would be disturbed.

Cumulative effects to wild horses under the No Action Alternative would include 267 acres of previously authorized disturbance within the Plan area. Climate change may affect wild horse habitat within the CESA. Climate change would have impacts similar to those noted for soils, vegetation and general wildlife (sections 5.7.6, 5.10.6 and 5.11.6, respectively), including reduction in soil moisture, transitioning of habitats and a changes in the amount of cover and available forage and water resources. Reduction in soil moisture in time could impact plant communities and could result in replacement of deep-rooted native perennial grass and shrub communities by annual grasses.

As annual grasses die, the plant matter dries out and serves as fuel for wildfires, increasing the risk of wildfires and the extent of the spread of wildfires. More frequent wildfires would result in more frequent removal of existing vegetation communities and further reduce soil moisture in affected areas, providing more opportunities for invasive species such as annual grasses that would be more tolerant of warmer temperatures and lower moisture conditions. In time these invasive species could outcompete native perennial species in the CESA. Such changes could result in a reduction in availability of forage habitat for wild horses. In addition to these changes, an increase in uncharacteristic vegetation types (vegetation that varies significantly from the reference condition and are caused by anthropogenic disturbances) is expected in some vegetation communities, while ecological disturbance is likely to decrease in others (Provencher and Anderson 2011, Wildlife Action Plan Team 2012).

While long-term climate observations and model predictions indicate continuous rise in temperature and global warming, scientists have found that climate trends are not adequately identified for periods of a few years or even a single decade but rather over a period of several decades (Santer et al. 2011). In fact, climate trends may suggest cooling over that short a span of time while overall longer term projections indicate warming (Easterling et al. 2009). This contrast is likely due to superimposing human-induced warming on a naturally varying climate; therefore, the temperature rise has not been, and will not be, uniform or smooth across the country or over time (Walsh et al. 2014).

As such, definitive projection of the exact type and timing of any vegetation shifts and the specific impacts to wild horses in the CESA due to climate change during the period of 10 years of mining and three years of reclamation under any of the action alternatives is difficult; however changes in vegetation communities, amount of cover, or availability of water resources could impact forage resources for wild horses. The expected extent of climate change impacts to wild horses will be similar across all alternatives. Under any of the action alternatives, climate change impacts to vegetation would be mitigated through Applicant-Committed EPMs, the use of appropriate reclamation seed mixtures, and targeted practices to minimize spread of invasive plant species; are all anticipated to minimize impacts to project-related vegetation due to climate change.

5.15 CULTURAL RESOURCES

5.15.1 CESA Boundary

The CESA for cultural resources includes the western edge of White Pine County from just south of the Elko County line, a small part of Eureka County in the Diamond Range, and a small part of

Nye County to the south consisting of the Duckwater Valley and adjacent portions of the Pancake Range and Railroad Valley (Figure 5.5-1). This area consists primarily of the Newark Valley, upper Railroad Valley, and the adjacent mountains. This area was chosen because it encompasses an interconnected area of historic and ongoing mining. Mining areas in the CESA include the Bald Mountain Area, portions of the Eureka Mining District, the Gibellini Mining District, the Pancake Mining District, and the historic White Pine Mining District. Table 5.2-1 lists the acreages of surface disturbance by project within the cultural CESA that may have affected important cultural resources.

5.15.2 Introduction

Historic properties that may cumulatively be affected by past, present, and reasonably foreseeable future actions in this study area include prehistoric and historic archaeological sites, historic structures, and TCPs. In addition, development and modification of the landscape can indirectly alter important aspects of the historic setting of historic transportation corridors and other extensive historic sites. Incremental degradation and loss of historic properties is an irretrievable loss of tangible cultural heritage and the information and the interpretive potential that they embody. The primary current land uses in the CESA are mining and ranching.

5.15.3 Past and Present Disturbances

Past and present disturbances that have contributed to the degradation and loss of historic properties include mineral development, oil and gas development, construction and maintenance of roads, construction and maintenance of utilities, and private development. Uncontrolled events such as wildland fires also result in large areas of surface disturbance and damage. Undocumented indirect effects include vandalism, artifact collection and inadvertent damage to sites. Many private and ongoing activities are not regulated, and there will be no record of adverse effects to historic properties. In addition, the effects of uncontrolled events such as wildfires and flash floods to the loss of historic properties are largely undocumented. Past and present land uses in the CESA have contributed to the degradation, loss, and burial of historic properties and associated artifacts as well as alteration of the historic setting associated with these historic properties.

Authorized actions on state and federal land require that cultural resource inventories be conducted to identify the presence of historic properties that could be affected by these actions. There is no such requirement for actions on private land unless they involve state or federal approval, permits, or funding. For federal actions, Section 106 of the NHPA requires that effects to historic properties be taken into consideration and that adverse effects be avoided or mitigated to the extent possible.

Known past and present surface disturbances in the CESA are listed in Table 5.2-1 and have been dominated by road development, wildland fires, and mineral development. In the past, mineral development was less extensive in the CESA, but it has become the predominant class of present actions in terms of acreage of surface disturbance. Known past actions and events have resulted in at least 41,107 acres of surface disturbance. Present actions have disturbed 13,778 acres. The Project would also contribute to cumulative adverse effects and loss of historic properties.

5.15.4 Reasonably Foreseeable Future Disturbances

RFFAs in the CESA will be dominated by mineral development. These actions and associated disturbances include new or continued mining at Bald Mountain, North and South Operations, Gibellini, Green Springs, Centennial-Seligman Mining and Exploration Project, and the Pan

Project. In general, roads, utilities and other infrastructure are in-place and maintenance would result in limited new surface disturbance. Of the 12,892 acres of anticipated new surface disturbance to be created by RFFAs, 12,567 acres would be created by mineral development in the CESA. Increased activity, including recreational activity and improved access to remote areas may also result in indirect impacts including continuing artifact collection, vandalism, and inadvertent site degradation. State and federal actions would require avoidance or mitigation of adverse effects to historic properties. However, mitigation only lessens the adverse impacts; it does not prevent them.

5.15.5 Cumulative Disturbance

Past, present and RFFAs, including mining and related activities, road and utility development, oil and gas development, ranching, and private development as well as uncontrolled events such as wildland fires have resulted in or will create over 67,777 acres of surface disturbance which contribute directly to the cumulative degradation and loss of historic properties. These activities also contribute indirectly to the cumulative degradation and loss of historic properties by increased access and use, unauthorized artifact collection, vandalism, and inadvertent damage. No regulatory process exists regarding performing inventories of existing cultural resources in an area unless a federal nexus triggers such an inventory. As a result, no consistent or systematic records of the number of historic properties exist until and unless a project has been or is proposed in an area, particularly for undertakings completed before the implementation of environmental and preservation regulations in the 1970s.

Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 71,456 acres, or approximately 5 percent and facilitating access and recreational activity by the improvement and maintenance of roads.

5.15.6 Cumulative Effects

Current and future development, including the Project, would contribute to direct and indirect cumulative adverse effects to historic properties. Federal actions would need to comply with the requirements of Section 106 of the NHPA. Adverse effects to historic properties resulting from these federal actions would be addressed individually. If possible, the historic properties would be avoided and protected. If avoidance is not feasible, and approved mitigation plan would be implemented. Adverse effects to historic properties from actions not governed by these requirements would continue.

The Proposed Action may not affect all of the historic properties that have been identified within the APE, or some of the properties may be re-evaluated and not be considered historic properties. As summarized in Section 4.13, all of the alternatives except the Western Tailings Storage Facility Alternative could affect as many as 8 historic properties. The APE for the Western Tailings Storage Facility Alternative includes an additional historic property. Consequently, the contribution of this Project to cumulative effects to historic properties could be as many as nine historic properties.

5.16 LAND USE AUTHORIZATION AND ACCESS

5.16.1 CESA Boundary

CESA for land use authorization and access includes the portion of Hunt Unit 131 west of the Humboldt-Toiyabe National Forest Ely District, and the Duckwater Shoshone Reservation (Figure 5.6-1). The total area for this CESA is 391,132 acres of land.

5.16.2 Introduction

White Pine County is comprised predominantly of federally-managed lands with approximately 96 percent of White Pine County lands being administered by federal agencies, mainly BLM and the USFS (WPCPLUAC 2007). Land use within the CESA consists mainly of agriculture, livestock grazing, mineral development and exploration, recreation, wildlife habitat, urban development, and renewable energy development. However, mining, agriculture, livestock grazing, and recreation are the predominant land uses within the CESA, and urban development (i.e., residential, commercial, and industrial) has historically been very nominal within White Pine County (White Pine County 2009).

5.16.3 Past and Present Disturbances

Past and present disturbances that have affected land use and access in the CESA include mineral extraction and exploration; roads; and wildland fires. Total past and present surface disturbance within the CESA is 6,136 acres, which is approximately 2 percent of the CESA.

As summarized in Table 5.2-1, the total disturbance area for past and present mineral development and exploration actions within the CESA is approximately 681 acres. Past mineral development resulted in approximately 409 acres of surface disturbance. Approximately 89 acres of past and present disturbance occurred for sand and gravel operations and 33 acres for oil and gas development. Present mining operations include Gold Rock Exploration and the Cathedral Canyon Exploration Project for a total of 272 acres of disturbance. Land use and access are typically restricted in active mining operations.

There are approximately 5,129 acres of disturbance within the CESA from roads as summarized in Table 5.2-1.

5.16.4 Reasonably Foreseeable Future Disturbances

RFFAs within the CESA consist of mineral development and exploration activities, utilities and infrastructure, restoration and seeding projects, and limited urban development. Total surface disturbance associated with RFFA is approximately 3,589 acres, which represents approximately 1 percent of the CESA.

Foreseeable future disturbances within the CESA for Land Use Authorization and Access include the Pan Mine Project and the Strawberry 69 kV Transmission Line as summarized in Table 5.2-1.

5.16.5 Cumulative Disturbances

The CESA for land use authorization and access is 391,132 acres. Of the total acreage within the CESA, approximately 9,725 acres of disturbance are associated with past, present and RFFAs, which is a disturbance of approximately 3 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres, to 13,404 acres, or approximately 3 percent of the CESA. Approximately 7,765 acres of this disturbance is associated with mineral development and exploration, which has the most potential to impact land use and access by restricting other land uses during the life of the mining operation, restricting access during the life of the mining operation, and increasing traffic on major transportation routes. The disturbance resulting from the Proposed Action would mostly be reclaimed after mining operations are completed.

5.16.6 Cumulative Effects

Considering past, present, and RFFAs within the CESA that may affect land use and access combined with the Proposed Action, cumulative effects to land use and access would comprise approximately 3 percent of the total CESA. The Proposed Action, combined with past, present, and RFFAs, is anticipated to result in minimal additional traffic on US 50, SR 379 (Fish Creek Road), Green Springs Road or other roads; therefore, the Proposed Action would have a negligible increase of Annual Average Daily Traffic.

Cumulative effects to land use authorization and access under the Northern Power Line Alternative would be the same as those under the Proposed Action, with the exception that it would disturb approximately 33 fewer acres of BLM-administered land.

Cumulative effects to land use authorization and access under the Southern Power Line Alternative would be the same as those under the Proposed Action, with the exception that it would disturb approximately 31 fewer acres of BLM-administered land.

The cumulative effects to land use authorization and access under the Northwest Main Access Route Alternative would be similar to those under the Proposed Action, with the exception that the main access road would be in a different location and would disturb approximately 47 (Northern Power Line Route) or 53 (Southern Power Line Route) additional acres of BLM-administered land.

Cumulative effects to land use authorization and access under the Modified County Road Re-Route Alternative would be the same as those under the Proposed Action.

Cumulative effects to land use authorization and access under the Western Tailings Storage Facility would be similar to those under the Proposed Action, with the exception that the fenced area would be smaller (7,136 acres); therefore, there would be approximately 1,708 acres less long-term disturbance to BLM-administered land.

Cumulative effects to land use authorization and access under the No Action Alternative would include 267 acres of previously authorized disturbance to BLM-administered land within the Plan area.

5.17 VISUAL RESOURCES

5.17.1 CESA Boundary

The CESA boundary for visual resources is the viewshed from which a casual observer may distinguish elements of the Proposed Action and action alternatives from the background. This CESA is the area where the proposed facilities may be viewed within a distance of approximately 15 miles as dictated by surface topography (Figure 5.6-1). The total area of this CESA is 562,658 acres of land.

This CESA boundary was chosen because it encompasses the viewshed of the project as represented by the KOPs, based on the fact that it is the area where the project effects could be viewed relative to cumulative activities. Using a larger area would not capture any additional relevant effects.

5.17.2 Introduction

The most common landforms in the area are wide basins, which are bounded by ranges, and cut by small creeks and drainages. Scenic variety exists in the topography and densities, arrangements, and colors of vegetation.

The majority of the CESA is under BLM jurisdiction, with some lands on the east side of the CESA under Humboldt-Toiyabe National Forest administration. The BLM-administered land in the CESA is managed under VRM Class III and IV. The proposed project facilities are primarily located within areas designated as VRM Class IV, with the exception of portions of the power line corridors.

It is important to note that the disturbance numbers addressed throughout this section relate specifically to surface disturbance. Direct comparison of specific impacts to visual resources across the CESA beyond surface disturbance was not included in this analysis. In the case of visual resources, the amount of surface disturbance may or may not directly relate to visual intrusions within the CESA. Based on the analysis conducted in Section 4.16 for the Proposed Action, existing roads and the pre-existing mining facilities associated with the reclaimed Easy Junior Mine were the primary past and present visual intrusions noted within the CESA in the vicinity of the Proposed Action.

5.17.3 Past and Present Disturbances

The CESA is generally not disturbed visually other than for roads, mining and exploration operations and oil and gas wells. The largest type of visual disturbance is the presence of roads. Quantified past and present road disturbances (4,721 acres) have altered less than 1 percent of the CESA visually as summarized in Table 5.2-1.

The total disturbance area for past and present mineral development and exploration actions within the CESA is approximately 1,140 acres. Past and present mineral development and exploration projects within the CESA include the Easy Junior Mine, Mount Hamilton Mine, Green Springs Mine, Centennial Exploration Project, Wheeler Ridge Exploration Project, Gold Rock Exploration Project, Pan Mine Exploration Project, and sand and gravel operations. Limited surface disturbance (12 acres) from oil and gas wells has occurred. Vegetation clearing associated with mining and exploration activities can result in visual effects. Historic mining operations are in various stages of natural re-vegetation.

5.17.4 Reasonably Foreseeable Future Disturbances

The reasonably foreseeable future disturbances within the visual resources CESA include mineral exploration and mining. Foreseeable mineral exploration and mining operations include the Pan Mine Project, the Centennial- Seligman Mining and Exploration Project, and the Green Springs Mineral Exploration Project summarized in Table 5.2-1. These 3,754 acres represent less than one percent of the CESA.

5.17.5 Cumulative Disturbances

Of the total 562,658 acres covered by the CESA, approximately 10,322 acres of disturbance are associated with past, present and RFFAs, which is a disturbance of approximately 2 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 14,001 acres, or about 3 percent of the CESA.

5.17.6 Cumulative Effects

Implementation of the Proposed Action and identified RFFAs would increase the amount of mining-related infrastructure in the analysis area and extend it into some undeveloped areas that currently do not include mining-related facilities. Any newly reclaimed or unreclaimed linear features would continue to contrast with the existing landscape. Reclamation of mined areas in

the CESA would reduce the visual contrast in the disturbed areas with adjacent vegetation. The reclaimed areas landscape would be revegetated primarily with grass and forbs and patches of shrubs and trees. The reclaimed areas would still be visible but would not be as obvious a visual impact as the mining activities themselves. Over time, the landscape views inclusive of reclaimed mining areas would become an acceptable part of the landscape. The eventual establishment of 'islands of diversity' (clusters of planted trees and shrubs) would restore a setting more similar to the original landscape in approximately 15 to 50 years.

Implementation of EPMs or BMPs would minimize long-term effects to visual resources because disturbances would be reclaimed as soon as possible and light fixtures and berms would be installed to limit light pollution. Based on the analysis described in Section 4.16, the degree of contrast at each KOP would not conflict with the objectives of BLM VRM Class III or IV. The cumulative effects of the Proposed Action on the visual resources of the CESA would be long-term at each KOP.

The past and present actions in the CESA produce very little light pollution and have no meaningful adverse impact on the darkness of the night sky (BLM 2013c). The Proposed Action is anticipated to have impacts on the night sky during operation because lighting would occur in a remote location in the CESA. The RFFAs in the CESA, particularly the mining projects, would be expected to require a similar number and types of light sources for operation that the Proposed Action requires. The RFFAs in the CESA would be expected to have impacts when considering collectively because each reasonably foreseeable mining project would occur in a remote location in the CESA widely separated from the other RFFAs, such that the intensity or concentration of light sources in any given area would not increase to a level producing regional light pollution. Light sources associated with the proposed project would be permanently removed from the project area and the CESA upon completion of reclamation.

Cumulative effects to visual resources under the other action alternatives would be the similar to those described under the Proposed Action.

5.18 RECREATION

5.18.1 CESA Boundary

The CESA for recreation is Hunt Unit 131 (Figure 5.11-1). The total area of this CESA is 998,955 acres of land.

5.18.2 Introduction

Existing recreational use within the CESA is dispersed and includes fall and summer activities such as hiking, primitive camping, off-highway vehicle use, hunting, and fishing. During winter months and year-round, activities include winter trapping, shed antler collection, and predator hunting, snowshoeing, cross-country skiing, backcountry snowmobiling and ski opportunities. The primary land uses within the CESA are grazing, extractive activities (mining, oil and gas leases), and utility distribution. These land uses all have the potential to affect the quality and quantity of recreational activities within the CESA by affecting the actual acreage available for recreation; or visual impacts such as transmission lines, air pollution, or disturbances associated with extractive activities. While the area for dispersed recreation is expansive, developed recreation sites are limited in scope and capacity.

Recreational areas within the recreation CESA include Currant Mountain Wilderness (47,276 acres), Red Mountain Wilderness (20,490 acres), Shellback Wilderness (36,143 acres), White

Pine Range Wilderness (40,013 acres), Bald Mountain Wilderness (22,367 acres) and the Humboldt-Toiyabe National Forest (331,483 acres).

5.18.3 Past and Present Disturbances

Past and present mineral development and exploration projects within the CESA are summarized in Table 5.2-1 and include the Cottonwood Creek Geophysical Exploration Project, Robinson Mine, Easy Junior Mine, the Mount Hamilton Mine, the Griffon Mine, Gold Rock Exploration Project, Green Springs Mine, Wheeler Ridge Exploration Project, Pan Mine Exploration Project, the Cathedral Canyon Exploration Project, Centennial Exploration Project, and sand and gravel operations. Oil and gas operations are also present.

Lands occupied by extractive activities have reduced recreational value, may have restricted access or may reduce acreage available for recreation when vegetation and/or wildlife are adversely affected. Development of roads associated with mining, gas, and oil exploration can enhance recreational use of an area by improving access.

Past and present road disturbance, including United States highways, state routes, local/county roads, BLM and USFS roads, and other roads totals 11,773 acres (less than 1 percent) of the CESA. Roads provide access to recreation areas and can also become recreational opportunities themselves (i.e., Lincoln Highway, US 50/Loneliest Highway SRMA). For those seeking solitude and a primitive outdoor experience, development of roads can impact the visual recreation experience.

Past and present disturbances within the CESA have impacted 28,701 acres or 2.9 percent of the CESA.

5.18.4 Reasonably Foreseeable Future Disturbances

RFFAs within the CESA consist of mine development and exploration, and would disturb another 3,863 acres in the CESA. Extractive activities and exploration projects result in an influx of temporary construction workers followed by permanent operations staff. The effect of increased population would be evident in White Pine County, where the existing population is relatively small. Increased dispersed use within the CESA could make it more difficult to recreate without encountering other people, or experiencing human effects. Increased population could result in higher demand for hunting permits, and thus increased competition for limited resources, traditionally used by the long term or permanent residents of the area.

5.18.5 Cumulative Disturbances

The effects of past actions, present actions and RFFAs on recreation in the CESA result mainly from restricted access as a result fencing and other access limitations associated with mining-related projects. While mines are operational, public access must be restricted for safety reasons. Of the total 998,955 acres covered by the CESA, approximately 32,564 acres of disturbance are associated with past, present, or RFFAs, which is a disturbance of approximately 3 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 36,243 acres, or about 4 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,455 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 95 to 96 acres.

In addition to direct impacts to recreation resources, impacts to recreation resources can include exclusion from public access. Based on the analysis conducted in Section 4.17 approximately 9,300 acres of lands within the CESA, including the 267 acres of exploration identified as a present action in this cumulative effects analysis, would be impacted by the Proposed Action. However, this area of impact includes the 8,757-acre fenced mine area. In the short-term, the fence would exclude recreational users from this area. The fencing would be removed during the closure process, and public access to most areas would be re-established. Access to the 367-acre mine pit would be restricted for public safety reasons.

5.18.6 Cumulative Effects

Implementation of the Proposed Action would increase the extent of mining-related infrastructure in the CESA. Identified RFFAs would result in additional mining-related infrastructure within the CESA, cumulatively resulting in such infrastructure extending into areas that currently do not include mining-related infrastructure and fragmenting the area with the presence of power lines and roads. The mine pit may become a recreational viewing area. Construction and operation of the proposed facilities, in combination with the RFFAs, would affect the recreational experience of hunters and others that seek a remote recreational experience. Hunting is currently among the most prevalent recreational activity within the CESA. The impact of increased traffic and indirect effects on game animals should be minimal. Given the overall size of Hunt Unit 131, these cumulative effects are expected to be negligible because undeveloped areas within Hunt Unit 131 would continue to be available to recreational users.

For the most part the impacts would be temporary with the exception of unreclaimed mining features (pits and other facilities) that would remain inaccessible for recreation. Hunting could be affected indirectly as a result of cumulative impacts to game animal habitat and movement patterns. Increased traffic on public roads is not anticipated to affect access to public lands for recreation. Indirect effects on game animals are unlikely to have a measurable effect on hunting. Cumulative effects to recreational resources under the Northern Power Line Alternative would be the same as those under the Proposed Action, with the exception that it would disturb approximately 33 fewer acres of BLM-administered land.

Cumulative effects to recreational resources under the Southern Power Line Alternative would be the same as those under the Proposed Action, with the exception that it would disturb approximately 31 fewer acres of BLM-administered land.

The cumulative effects to recreational resources under the Northwest Main Access Route Alternative would be similar to those under the Proposed Action, with the exception that it would disturb approximately 47 (Northern Power Line Route) or 53 (Southern Power Line Route) additional acres of BLM-administered land.

Cumulative effects to recreational resources under the Modified County Road Re-Route Alternative would be the same as those under the Proposed Action.

Cumulative effects to recreational resources under the Western Tailings Storage Facility would be similar to those under the Proposed Action, with the exception that the fenced area would be smaller (7,136 acres); therefore, there would be approximately 1,708 acres less long-term disturbance to recreational resources under this alternative.

Cumulative effects to recreational resources under the No Action Alternative would include 267 acres of previously authorized disturbance within the Plan area.

5.19 SOCIOECONOMICS

5.19.1 CESA Boundary

The cumulative effects analysis considered potential cumulative effects in the socioeconomics CESA area described in Table 5.1-1 above and shown on Figure 5.6-1. The CESA was selected for analysis as impacts from the Proposed Action and alternatives would be realized in this area, and therefore represents where any cumulative impacts may be realized.

5.19.2 Introduction

The social and economic structures and relationships in the analysis area are described in Section 3.18. The analysis presented in Section 4.16 includes a detailed description of the potential direct and indirect economic effects of all alternatives.

5.19.3 Past and Present Activities

All data and findings in Sections 3.18 and 4.18 apply to and are utilized in the cumulative impacts analysis. The past and present land uses and economic activities in the CESA have had, and continue to have, direct, indirect, and induced effects on socioeconomics in the CESA through changes to employment (both type and numbers), changes in housing availability, changes to the population, and changes to the fiscal conditions of local jurisdictions. These past and current actions have resulted in the current socioeconomic conditions in the CESA as described in Section 3.18.

5.19.4 Reasonably Foreseeable Future Activities

Reasonably foreseeable future activities in the CESA include mineral exploration, the start-up of new mining operations such as the Pan, and Gibellini mines; the expansion of existing mining operations such as the Centennial-Seligman Exploration and Mining Project and Bald Mountain Mine; the closure of existing mining operations, oil and natural gas exploration and development; construction and operation of the ON Line 230/500 kV transmission line; and other projects as presented in Section 5.4.

Each RFFA could, if and when implemented, result in direct, indirect, and induced effects on the socioeconomic conditions in the CESA. These effects would be realized from the employment of workers during construction, operation, and decommissioning (as relevant) of the RFFAs, from the spending of project proponents in the CESA, and from the taxes collected by local jurisdictions. Construction and/or operation of each RFFA would create a positive impact on local economies and increased employment opportunities, drawing on the local and regional workforce. Concurrent construction or operation of similar projects could result in a demand for labor that cannot be met by the region's labor pool, which could lead to an influx of nonlocal workers. This population increase could impact socioeconomic conditions and the demand for public services and utilities.

5.19.5 Cumulative Effects

The economies of the two counties are, and have been, dependent to a large degree on mining, the intensity of which is determined to a large extent by the market price for gold, silver, and other extracted minerals. Consequently, economic activity tends to cycle between boom and bust. When mineral prices are high, employment and wages rise and a shortage of skilled workers develops. Home prices tend to rise as new employees move into the area and local businesses

profit from increased spending. New businesses are started and new commercial properties may be developed. A drop in mineral prices or other limitations on mine development results in a reversal of this process; employment and spending fall, home prices may stagnate or fall, and spending at local businesses drops, some commercial enterprises may go out of business, and commercial vacancy rates may increase.

As described in Section 4.16, the Proposed Action would result in socioeconomic impacts in the short- and long-term by generating additional employment positions, which would result in increased population and income, which in turn would result in increased demand for housing, schools, law enforcement, fire protection, and other services and infrastructure. The Proposed Action would, alone, have minor to moderate positive and negative impacts as presented in Section 4.16.

The positive and negative socioeconomic impacts of the Proposed Action, in combination with the positive and negative impacts attributable to the RFFAs presented above, could be significant. However, there is considerable uncertainty regarding the potential impacts that may be realized from the RFFAs; many of the RFFAs are mining projects, which may or may not come to fruition depending upon the price of the targeted commodity. In addition, there is uncertainty regarding the timing of the potential impacts: for instance, the Mount Hope project has been permitted for several years but no construction activities have started. The uncertainty regarding which RFFAs may actually be realized, and the timing of those potential impacts, makes it difficult to accurately ascertain the potential cumulative effects; if all RFFAs and the Proposed Action were undertaken simultaneously, socioeconomic impacts (including but not limited to large increases in temporary and permanent populations and exacerbation of the existing housing shortage) would be significant. However, if the construction of the RFFAs is staggered over time, the potentially-significant impacts could be ameliorated to some extent. In addition, both counties would realize revenue from the Proposed Action and RFFAs, including sales taxes and ad valorem taxes from net proceeds of other mining operations, which would serve to ameliorate some of the potential negative cumulative impacts.

Comparing the potential impacts under the Proposed Action to the sum of the employment positions that may be created by the RFFAs, and with the potential capital and operating costs of the RFFAs, regardless of the timing of the RFFAs, a relatively small number of construction and operations positions would be created, and relatively small capital and operating costs would be incurred under the Proposed Action.

Cumulative effects to socioeconomic resources under each of the alternatives would be similar to those under the Proposed Action.

The No Action Alternative would have no additional negative or positive socioeconomic impacts, and thus no contribution to any cumulative effects.

5.20 HAZARDOUS AND SOLID WASTE

5.20.1 CESA Boundary

The CESA for hazardous materials and wastes (Figure 5.20-1) is the Plan area and second water supply well and infrastructure; corridors for the Proposed Action power line route and Northern and Southern power line route alternatives; the main access route and northwestern main access route alternative; the Pan and Mount Hamilton mines; and potential transportation routes to the Plan area from the following major hubs from which materials would be transported:

- From Eureka via US 50 (Lincoln Highway) east;
- From Ely via US 50 west; or
- From Elko via I-80 east or from Utah via I-80 west to US 93 and south on US 93 or US 93A to US 93, respectively, to Ely, west on US 50.

The total area of this CESA is 41,547acres of land.

5.20.2 Introduction

This section provides an inventory of existing or reasonably foreseeable future mine operations that transport hazardous materials on the transportation routes analyzed for the Proposed Action (Section 3.20). Currently, the Plan area contains disturbance from the Easy Junior Mine, however, no hazardous or solid waste remains at the site following reclamation. Under the Proposed Action, the use, storage, transport, and disposal of hazardous materials or solid wastes would change. Therefore, there would be an increase in the cumulative effects of these waste management activities from the Proposed Action associated with the CESA.

It is important to note that the disturbance numbers addressed throughout this section relate specifically to surface disturbance. In the case of hazardous materials and wastes, the amount of surface disturbance may or may not directly relate to effects within the CESA.

5.20.3 Past and Present Actions

The transportation routes described in Section 3.20 have been used in the past to transport hazardous materials, including chemical reagents and petroleum, to nearby mining operations, towns, and ranches. Vehicles using these routes contain petroleum products. Maintenance of these routes by the NDOT has included the application of herbicides annually within the highway Right-of-Way to minimize vegetation.

Present actions which may involve the transport of chemicals on the routes analyzed include mineral activities of the Midas, Jerritt Canyon, Hollister, Goldstrike, Mike, Carlin, Gold Quarry, and Leeville mines located north of Interstate 80 in Elko and Eureka counties; the Emigrant Mine located south of Interstate 80 in Elko County; the Ruby Hill Mine located south of US 50 in Eureka County; the Mount Hope Project located west of SR 278 in Eureka County; the Robinson Mine located south of US 50 in White Pine County; and the Bald Mountain Mine (including Mooney Basin, Alligator Ridge, and Yankee Mines) located north of US 50 in White Pine County. When operating, activities at the Ruby Hill Mine located south of US 50 in Eureka County, would also involve the transport of chemicals.

These operations bring increased vehicle traffic on the analyzed transportation routes, and would involve the transport of varying amounts of chemical reagents and petroleum products to the sites for use in mining exploration and operation and maintenance activities. Increased traffic on the transportation routes also increases the potential for vehicle collision with a supply vehicle and potential spills.

5.20.4 Reasonably Foreseeable Future Actions

Reasonably foreseeable generators of solid and/or hazardous waste associated with the CESA include the ongoing mining operations listed in Section 5.3, and any new mining operations or construction projects that may occur in the future. All future mining or construction projects would be required to comply with all state, federal, and local regulations relevant to the transport, handling, and disposal of all wastes.

The RFFAs shown in Table 5.2-1 could cause an increase in vehicular traffic on the analyzed transportation routes. New mining projects would require chemical deliveries to support construction, mining, and processing activities and removal of hazardous wastes from the sites to existing disposal facilities. Construction projects would require the mobilization of construction equipment, fuel, and possibly other chemicals needed for construction equipment.

5.20.5 Cumulative Disturbances

Under the Proposed Action or action alternatives, it is reasonable to expect that the analyzed transportation routes in Section 3.20 would be used to transport hazardous materials and wastes at levels that are greater than current levels. In addition, the NDOT would continue with their application of herbicides within the Right-of-Way of these transportation routes.

All hazardous wastes generated during the mining operations for the Proposed Action would be transported to off-site licensed facilities for treatment and disposal. All non-hazardous solid wastes would be disposed of in the proposed on-site Class III landfill. In the context of existing and reasonably foreseeable solid and hazardous waste generation locally and regionally, the Proposed Action would constitute an increase in hazardous waste generation and solid waste management in the Plan area, as well as increased transportation of hazardous waste on analyzed transportation routes.

Many of the past, present, and reasonably foreseeable future projects have the potential for chemical and petroleum spills. Implementation of the Proposed Action would result in an increase in the volume of fuels and chemicals transported with a proportionate increase in the risk of spills during transport on public travel routes (Figure 5.20-1). With implementation of EPMs or BMPs, it is improbable that a leak or spill from mining operations would be discharged off-site or reach potential water sources.

The cumulative impacts on hazardous waste are primarily associated with mining projects. An increase in traffic associated with the Proposed Action and other reasonably foreseeable future actions could increase the likelihood of vehicle collisions on the access roads, thus possibly increasing the probability of accidents resulting in a release of a hazardous material. Use of off-site hazardous waste disposal facilities would increase for disposal of the increased volumes of hazardous waste.

5.20.6 Cumulative Effects

Given the existing capacity and regulatory framework for generators, transporters, and storage and disposal facilities, the Proposed Action, in combination with the other projects, would have negligible effects on hazardous materials and wastes generation and management. As noted in Section 3.20, the Proposed Action would comply with all local, state, and federal regulatory requirements.

Cumulative effects associated with hazardous materials and wastes under each of the alternatives would be the same as those under the Proposed Action.

Cumulative effects associated with hazardous materials and wastes under the No Action Alternative would include the use of hazardous materials and production of wastes related to previously authorized exploration operations within the Plan area.

FIGURE 5.20-1
HAZARDOUS MATERIALS AND WASTE CESA

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 5/22/2015

0 22 44 Miles

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.

Basemap Source: ESRI World Shade Relief Map Service

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CHAPTER 6
CONSULTATION AND COORDINATION

This chapter describes specific actions taken by the BLM Bristlecone Field Office (formerly Egan Field Office) to consult and coordinate with Native American Tribes, government agencies, and interested groups, and to involve the interested general public during preparation of this EIS.

The BLM published the initial NOI in the Federal Register on September 5, 2013, formally announcing the intent to prepare an EIS for the Gold Rock Mine Project. Publication of the NOI initiated the scoping process and invited participation of affected and interested agencies, organizations, and the public in helping the BLM determine the scope and issues to be addressed in the EIS.

Public involvement is an important part of the environmental analysis under the NEPA process. Federal agencies are required to make "diligent efforts" to involve the public early and often in preparing and implementing their NEPA procedures, to inform the public by providing public notice of NEPA-related hearings, public meetings, and availability of documents, and to solicit appropriate information from the public (40 Code of Federal Regulation 1506.6).

The goal of the public involvement process is to foster public understanding of the project and allow participation in the analysis and decision-making process regarding the proposed Gold Rock Mine Project EIS.

6.1 COOPERATING AGENCIES AND CONSULTATION

Cooperating agencies were invited to participate in the NEPA process including: review of analyses, contribution of technical expertise, and assisting in the response to public comments as required by their jurisdiction or regulatory authority. Memoranda of Understanding (MOU) were developed between the cooperating agencies and the BLM. The purpose of the MOU is to:

- Confirm the formal designation of the BLM as lead agency in the EIS process with the responsibility for the conclusions of the draft EIS and final EIS;
- Formally designate cooperating agencies in the EIS planning process;
- Formalize and provide a framework for cooperation and coordination between the BLM and cooperating agency that is necessary to successfully complete the EIS in a timely, efficient and thorough manner;
- Describe the respective roles, responsibilities and expertise of each entity in the planning process; and
- Ensure that the working relationship between the BLM and cooperating agency meets the purposes and intent of NEPA.

As part of the federal review process in response to Midway's proposed Gold Rock Mine Project, the BLM sent letters to the stakeholders below to request participation as cooperating agencies for the NEPA process and EIS documentation. Cooperating agencies included:

- Duckwater Shoshone Tribe of the Duckwater Reservation, Nevada
- Eureka County Board of Commissioners;

- NDOW; and
- White Pine County Board of County Commissioners

All of these stakeholders have signed MOUs.

The SETT also served as a Cooperating Agency in accordance with the Memorandum of Understanding among the BLM Nevada State Office and BLM California State Office, the Nevada Department of Conservation and Natural Resources, and USFS Humboldt-Toiyabe National Forest completed in April 2016.

Throughout the development of the EIS, the BLM held periodic conference calls with the cooperating agencies to provide updates and discuss any comments, questions, or concerns. In addition, the BLM met with the cooperating agencies in person to provide status updates and address questions and concerns.

On July 24, 2013, Midway hosted a site visit to the project region. Members of the BLM Gold Rock Mine Project EIS interdisciplinary team, the third-party contractor team, Midway and its resource baseline study contractors, and the Duckwater Shoshone Tribe participated.

On April 23, 2014 the BLM attended a regularly scheduled White Pine County Board of County Commissioners' public meeting at the White Pine County Commission Chambers in Ely, Nevada. During this public meeting, the BLM provided an overview of the NEPA process and described the status of the Gold Rock Mine Project EIS. On November 6, 2014 the BLM presented similar information during a regularly scheduled Eureka County Commissioners' public meeting at the Eureka County Courthouse in Eureka, Nevada.

On February 6, 2015 the BLM attended a regularly scheduled Eureka County Commissioners' public meeting at the Eureka County Courthouse in Eureka, Nevada and described the DEIS and related public comment period, public meetings, and NOA process. On February 11, 2015 the BLM presented similar information during a regularly scheduled White Pine County Board of County Commissioners' public meeting at the White Pine County Commission Chambers in Ely, Nevada.

Also on February 6, 2015 the BLM attended a regularly scheduled Tri-County Management Group meeting and described the DEIS and related public comment period, public meetings, and NOA process.

On March 25 and May 27, 2015 the BLM briefed White Pine County Commission on the status of the Gold Rock DEIS. In late fall of 2015, work on the FEIS paused as the BLM and other agencies refined methods for implementing the GRSG LUPA. In late spring 2016, work on the FEIS resumed. On June 22 and August 10, 2016, the BLM briefed White Pine County Commission on the status of the Gold Rock FEIS.

Consultation with Native American tribes is part of the NEPA scoping process and a requirement of FLPMA. On August 7, 2013 the BLM mailed a letter to the 12 Tribal governments listed below requesting their assistance in identifying any traditional religious sites or cultural sites of importance that they believe may be impacted by the proposed Gold Rock Mine Project.

- Battle Mountain Band Council of the Te-Moak Tribe of Western Shoshone Indians of Nevada;
- Confederated Tribes of the Goshute Indian Reservation, Nevada and Utah;
- Duckwater Shoshone Tribe of the Duckwater Reservation, Nevada;

- Elko Band Council of the Te-Moak Tribe of Western Shoshone Indians of Nevada;
- Ely Shoshone Tribe of Nevada;
- Las Vegas Tribe of Paiute Indians of the Las Vegas Indian Colony, Nevada;
- Moapa Band of Paiutes of the Moapa River Indian Reservation, Nevada;
- Paiute Indian Tribe of Utah;
- South Fork Band Council of the Te-Moak Tribe of Western Shoshone Indians of Nevada;
- Te-Moak Tribe of the Western Shoshone Indians of Nevada;
- Wells Band Council of the Te-Moak Tribe of Western Shoshone Indians of Nevada; and
- Yomba Shoshone Tribe of the Yomba Reservation, Nevada

The BLM met with the Confederated Tribes of the Goshute Reservation, Nevada and Utah on April 4, 2014, the Duckwater Shoshone Tribe on April 28, 2014, and with the Ely Shoshone Tribe of Nevada on August 12, 2014. During each meeting, the BLM provided an overview of the NEPA process and described the status of the Gold Rock Mine Project EIS. None of the Tribes identified any traditional cultural properties or other concerns.

The BLM met with the Confederated Tribes of the Goshute Reservation, Nevada and Utah on February 10, 2015; the Ely Shoshone Tribe of Nevada on February 12, 2015; and the Duckwater Shoshone Tribe on February 23, 2015 to update the tribes on the NEPA process, inform them of the 45-day comment period, public meetings to review the DEIS, and the Tribal Open Houses. These Tribal Open Houses were held on March 6, 10, and 11, for the Confederated Tribes of the Goshute Reservation, Nevada and Utah, the Ely Shoshone Tribe of Nevada, and the Duckwater Shoshone Tribe, respectively. On May 26, 2015 The BLM met with the Duckwater Shoshone Tribe to discuss potential impacts to Native American Religious and Traditional Values. On June 26, 2015 the BLM met with the Confederated Tribes of the Goshute Reservation, Nevada and Utah to review the schedule, provide copies of the proposed action and alternatives, and describe a preliminary understanding of the preferred alternative.

The BLM met with the Business Council of the Confederated Tribes of the Goshute Reservation, Nevada and Utah on July 1, 2016; the Ely Shoshone Tribe of Nevada on July 12, 2016; and the Duckwater Shoshone Tribe on July 25, 2016 to notify the Tribe that the BLM had resumed preparing the FEIS for the Gold Rock Mine Project and discuss any concerns.

Consistent with the GRSG LUPA (BLM 2015c), the BLM consulted with NDOW regarding Greater Sage-Grouse seasonal use areas in and near the Plan area. The BLM then assessed suitability of these areas and consulted with the SETT regarding offset mitigation, as outlined in Section 4.9.12.

6.2 SCOPING PROCESS

6.2.1 Notice of Intent

The publication of the NOI initiated a formal 30-day scoping period and announced the locations and dates of the public scoping meetings. The scoping period was slated to close on October 7, 2013. However, the U.S. federal government was shut down between October 1, 2013 and October 17, 2013. To accommodate submittal of public comments for a full 30-day period, the BLM extended the scoping period by one week, from October 18, 2013 to October 25, 2013. On October 18, 2013 the BLM posted a notification regarding this extension on its website.

The BLM's email account that was set up to receive scoping comments on the Gold Rock Mine Project Environmental Impact Statement (EIS) during the initial scoping period (September 5, 2013, through October 7, 2013) was deleted during the federal government shutdown. Therefore, the BLM issued a second NOI for the Gold Rock Mine Project EIS on March 28, 2014 to extend the scoping period, invite members of the public to submit comments, and request that anyone who submitted comments by email during the initial 30-day scoping period resubmit their comments. No scoping meetings were held during this 30-day extension of the public input period, as these meetings were not affected by the technical difficulties with the email account.

6.2.2 Legal Notices and Press Releases

For the public scoping period and public scoping meetings, public notices were published with the following news sources:

- Reno Gazette Journal September 18, 2013;
- Wendover High Desert Advocate September 19, 2013 (printed and posted to the Internet on September 18, 2013);
- Eureka Sentinel September 19, 2013; and
- The Ely Times September 20, 2013.

A BLM press release was sent to the Associated Press and posted to the Ely District webpage on September 6, 2013.

For the extended scoping period, public notices were published in the following sources:

- Reno Gazette Journal April 3, 2014;
- Wendover High Desert Advocate April 3, 2014;
- Eureka Sentinel April 4, 2014; and
- The Ely Times April 4, 2014.

A BLM press release was sent to the Associated Press and posted to the Ely District webpage on March 28, 2014.

For the DEIS public review period, public notices were published with the following news sources:

- Reno Gazette Journal February 20, 2015;
- Wendover High Desert Advocate February 19 and 26, 2015 (printed and posted to the Internet on February 19 and 26, 2015);
- Eureka Sentinel February 19, 2015; and
- The Ely Times February 20, 2015.

A BLM press release was sent to the Associated Press and posted to the Ely District webpage on February 13, 2015.

6.2.3 Project Website

A website for the project was launched concurrently with publication of the initial NOI under BLM Projects on the BLM Ely District webpage (http://www.blm.gov/nv/st/en/fo/ely_field_office.html),

and will remain active throughout the life of the project. Scoping information posted to the project website includes the NOI, the press release, and the scoping letter that includes the project description, comment form, and proposed facilities figure.

6.2.4 Scoping Letter

The BLM prepared and mailed a "Dear Interested Party" letter to 401 interested parties on the EIS mailing list on September 6, 2013. This letter provided an overview of the proposed project, a proposed facilities figure, and a scoping comment form, and included information regarding participation in the public involvement process, and the schedule for the public scoping meetings. The mailing list of potentially interested parties was compiled by the BLM from existing information on persons with known and potential interest in the project and previous NEPA action mailing lists.

For the extended scoping period, The BLM prepared and mailed a "Dear Interested Reader" letter to 401 interested parties on the EIS mailing list on Friday, March 28, 2014. This letter provided information on the proposed Gold Rock Mine Project and solicited comments to help identify specific issues and concerns that BLM should consider and document in the EIS.

6.2.5 Scoping Meetings

The following three scoping meetings were held at locations in Nevada:

- Ely, Nevada September 24, 2013;
- Eureka, Nevada September 25, 2013; and
- Reno, Nevada September 26, 2013.

The meetings were held from 4:00 p.m. to 7:00 p.m. All attendees were asked to sign in and provide their contact information. Lists of individuals who signed attendance sheets at the public meetings are included Scoping Summary for the Gold Rock Mine Project Environmental Impact Statement (Arcadis 2014). Representatives from the BLM, Midway, and ARCADIS were present at each meeting to answer questions, discuss the project, and accept public comments. Attendees at the scoping meetings were provided with handouts describing the project as well as the NEPA process. Comment forms were also provided to all attendees to facilitate submission of written scoping comments. The public was given the option to provide comments during the meeting, using regular mail, fax, or e-mail. In addition, information regarding the project and the NEPA process was posted on the BLM's project website.

6.2.6 Scoping Response

All responses received by BLM were logged, analyzed, and summarized to discern issues of concern. A total of 60 letters, emails, and faxes were received in response to the requests for public comment regarding the project. Of those responses, 44, or approximately 75 percent, were unique Individual/Unaffiliated responses. Nine responses were received from various Sovereign Nation or Government Employees, Organizations, or Unions (15 percent), three responses from Conservation/Preservation Organizations (3 percent), and four responses were received from a Local Agency/Elected Official (7 percent). Copies of all letters, comment forms, faxes, and e-mails received are available in the Scoping Summary for the Gold Rock Mine Project Environmental Impact Statement (Arcadis 2014).

Comments received in response to solicitations, including names and addresses of those who commented, are considered part of the public record on this EIS and are available for public inspection at the BLM Ely District Office.

6.3 DEIS MAILING LIST

An EIS mailing list of interested persons was initially assembled from the scoping mailing list with the addition of persons who expressed interest in being added to the mailing list during and subsequent to scoping. The mailing list for the project was revised to add those persons who provided comments in response to scoping, requested to be on the mailing list, or signed a scoping meeting attendance list. Respondents that provided more than one comment letter were listed only once in the mailing list.

6.4 DEIS NOTIFICATION AND DISTRIBUTION

The NOA for the DEIS was published in the Federal Register on February 13, 2015, initiating a 45-day public comment period on the DEIS that closed on March 30, 2015. The BLM issued public notices announcing the availability of the DEIS in The Ely Times (February 20, 2015), the Eureka Sentinel (February 19, 2015), the High Desert Advocate (February 19 and February 26, 2015), and the Reno Gazette-Journal (February 20, 2015). The DEIS was widely distributed to interested parties identified in the updated mailing list, as described above, and also made available via the internet. Public meetings to review the DEIS were held on March 10, 11, and 12 2015, in Ely, Eureka, and Reno, respectively.

6.5 NEXT STEPS IN THE PLANNING PROCESS

Comments received on the DEIS were evaluated and modifications to the DEIS were made as needed. A second NOA was published in the Federal Register to notify the public of the availability of the FEIS, a 30-day public protest period under 43 CFR 1610.5-2 will follow, and a copy of the document will be filed with the EPA.

6.6 LIST OF PREPARERS AND REVIEWERS

Table 6.6-1 shows the names of BLM, cooperating agency, and Midway staff that participated in the preparation of the EIS. Table 6.6-2 shows the names of third-party contractor staff that contributed to the EIS.

Table 6.6-1 List of Preparers and Technical Specialists

Role/Resource	Name
BLM Ely District Office	
Project Manager/Range Resources/Air Quality Project Manager/ Water Resources/Hazardous Materials and Wastes	Maria Ryan Dan Netcher
Field Manager	Mindy Seal
Assistant Field Manager	Stephanie Trujillo
Socioeconomics	Travis Young Solomon Odum
Public Relations	Chris Hanefeld
Geology and Minerals/Geotechnical Issues	Miles Kreidler
Paleontology/Cultural Resources/Archeology	Leslie Riley
Air Quality	Andy Gault Sharay Dixon
Soils/ Prime and Unique Farmlands/Floodplains/Riparian/Wetlands/ Range Resources/Vegetation/ Invasive, Non-Native Plant Species	Ian Collier Cody Coombs Scott Standfill Chris McVicars

Table 6.6-1 List of Preparers and Technical Specialists

Role/Resource	Name
Land Use Authorizations and Access/Rights-Of-Way	Stephanie Trujillo
Forest Resources/Fuels	Cody Coombs
Wildlife/Migratory Birds/Special Status Wildlife and Plant Species	Marian Lichtler Nancy Herms
Wild Horses	Ruth Thompson
Wilderness Values	Emily Simpson
Visual Resources/Recreation	Erin Rajala
Native American Religious and Traditional Values/Tribal Coordinator	Elvis Wall
NEPA Compliance	Tom Barrett
Mining Issues	Jeremiah Waganer
BLM Nevada State Office	
Water Resources, Groundwater	Dan Erbes
Water Resources, Surface Water and Riparian Areas	Sarah Peterson
Air Quality	David Jones
BLM National Operations Center	
Air Modeling	Craig Nicholls
Midway Gold US Inc.	
Vice President of Environmental Affairs, Midway main contact	Tom Williams
Associate Director of Environmental Affairs, project coordination	Rebecka Snell
GIS Specialist	Aaron Ratke
Duckwater Shoshone Tribe (Cooperating Agency)	
Division Manager, Division of Natural Resources	Annette George-Harris
Division of Natural Resources, Environmental Department	Maurice Frank-Churchill
Division of Natural Resources, Environmental Department	Warren Graham
Eureka County Board of Commissioners (Cooperating Agency)	
Chairman, Eureka County Board of Commissioners	J.J. Goicoechea
Natural Resources Manager	Jake Tibbitts
Natural Resources Department, Hydrologist	Dale Bugenig
Nevada Department of Wildlife (Cooperating Agency)	
Eastern Region Mining Biologist	Lindsey Lesmeister
Habitat Biologist, Ely	Moira Kolada
Game Biologist	Kody Menghini
Game Biologist	Clint Garrett
White Pine County Board of County Commissioners (Cooperating Agency)	
Commissioner	Richard Howe
Chairman, White Pine County Board of County Commissioners	John S. Lampros
Road Superintendent, White Pine County	William (Bill) Calderwood
U.S. Environmental Protection Agency, Region 9 (Cooperating Agency)	
Environmental Review	Hugo Hoffman
National Environmental Policy Act issues	Patrick Kelly
Air Quality	Cleveland Holladay
Nevada Sagebrush Ecosystem Program Sagebrush Ecosystem Technical Team	
Greater Sage-Grouse Mitigation	Kelly McGowan

Table 6.6-2 Third Party Contractor – ARCADIS U.S., Inc.

Role/Resource	Name	Experience
Project Manager	Jerry Koblitz	B.S. Natural Resource Management 41 years of experience
Assistant Project Manager/Water Resources	Elizabeth Duvall	B.S. Environmental Resource Management 15 years of experience
NEPA Technical Advisor	David Cameron	B.S. Biology M.S. Animal Ecology 35 years of experience
Quality Control/Senior Review/ Cumulative Effects	Eric Cowan	GIS Certificate/Business Studies 21 years of experience
Water Resources	David Lipson	B.S. Geology M.S. Hydrogeology Ph.D. Geological Engineering 24 years of experience
	Kyle Richards	B.S. Degree Zoology M.S. Hydrology 9 years of experience
	Khandaker Ashfaque	B.S. Civil Engineering M.S. Environmental Engineering Ph.D. Environmental Engineering 16 years of experience
	Gaston Leone, P.E.	B.S. Civil Engineering M.S. Civil Engineering 18 years of experience
	Jeff Barry	B.S. Forest Management M.S. Hydrology Ph.D. Civil Engineering 15 years of experience
Geology and Minerals/Geotechnical Issues	Benjamin Black	B.S. Geology M.S. Geological Engineering 18 years of experience
	Dan Bonner	B.S. Environmental Engineering M.S. Civil Engineering P.E. - Nevada
Paleontology/Soils/Floodplains	Jason Adams	M.S. Geological Sciences 5 years of experience
Prime and Unique Farmlands/Wild Horses/Land Use Authorizations and Access/Visual Resources/Recreation	Kathryn Cloutier	B.A. Biology/Pre-Medicine M.S. Environmental Management/Natural Resources 27 years of experience
Air Quality	Susan Riggs	B.S. Biology M.S. Environmental Science 18 years of experience
	Russ Jalbert	B.S. Meteorology B.S. Comprehensive Science 21 years of experience
	Nao Lee	B.S. Mechanical Engineering 7 years of experience

Table 6.6-2 Third Party Contractor – ARCADIS U.S., Inc.

Role/Resource	Name	Experience
Wildlife/Migratory Birds/Special Status Wildlife Species	Allison Haraminac	B.S. Biology M.S. Ecology and Evolutionary Biology 6 years of experience
	Kelly Portue	B.S. Fisheries and Wildlife Biology 6 years of experience
Vegetation/Invasive, Non-Native Plant Species/ Riparian/Wetlands/ Special Status Plant Species	Carla DeMasters	B.S. Economics (Environmental and Natural Resource) M.A. Geography (Biogeography) 10 years of experience
Forest Resources/Fuels/Range Resources	Jocelyn Finch	B.A. Biology and Anthropology M.S. Forestry 13 years of experience
Cultural Resources/Archeology/Native American Religious and Traditional Values	Carl Späth, Ph. D, RPA	B.A. Anthropology M.A. Anthropology Ph.D. Anthropology 36 years of experience
Socioeconomics/Environmental Justice	Conrad Mulligan	B.A. International Politics M.S. Marine Science 18 years of experience
Cumulative Effects	Tara Corbett	B.A. Liberal Arts M.S. Geography 14 years of experience
GIS/Mapping	Jie Chen	M.A. Geography 8 years of experience
Wildlife Resources Responses to Comments Quality Control	Robin Johl	B.S. Biological Sciences 3 years of experience
Editor	Deb Ballheim	B.A. English Composition/Linguistics 16 years of experience
Document Control Database Management Word Processing Project Record	Carrie Womack	B.S. Animal Science 31 years of experience

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CHAPTER 7
PUBLIC COMMENTS AND RESPONSES ON THE DEIS

7.1 PUBLIC COMMENTS

7.1.1 Introduction

The Notice of Availability for the Gold Rock Mine DEIS was published in the Federal Register on February 13, 2015 at which time the 45-day comment period commenced and ended on March 30, 2015. The NOA comment period process included public meetings which were held by the BLM on March 10, 11, and 12, 2015 in Ely, Eureka, and Reno, respectively. The EPA requested additional time to obtain clarification and prepare comments on the DEIS. The BLM granted the extension, participated in two conference calls with the EPA on April 22 and May 4, and provided a document summarizing issues discussed during the calls and providing guidance on the location of information within the Plan and other supporting technical documents. After receipt of this document on May 14, 2015, the EPA submitted comments on June 1, 2015.

A total of 23 agencies, businesses, organizations, and interested parties provided written comments on the DEIS at a public meeting, by mail, through the BLM's ePlanning comment submittal system, or by email. All comments on the DEIS that were received were read and given careful consideration. Each comment was analyzed for its content, and appropriate responses were prepared. In some cases, the comments provided information or suggested changes that were incorporated into this FEIS.

7.1.2 Demographics

Demographic coding in the database helps to form an overall picture of who is submitting comments, where they live, their general affiliation with various organizations or government agencies, and the manner in which they respond. Demographic coding allows managers to identify specific areas of concern linked to respondent categories, geographic areas, and response types.

Although demographic information was captured and documented in Table 7.1-1, it is important to note that the consideration of a public comment is not swayed by demographics. Every comment and suggestion has value, whether expressed by one or many respondents, and whether or not the comment originates from an address local to the project. All input was considered, and the analysis team attempted to capture all relevant public concerns in the analysis process.

Table 7.1-1 Demographic Codes

Code	Geographic Area	Number of Commenters
EC	Eureka County, Eureka NV	1
WC	Washoe County, Reno NV	2
WPC	White Pine County, Ely NV	6
ONV	Other Nevada Counties	9
OUT	Outside Nevada	5
UNK	Unknown	0
INT	International	0

As shown in Table 7.1-1, the majority of commenters (52 percent) are located in the state of Nevada (outside of White Pine County) with an additional 6 (26 percent) originating from within White Pine County and 5 (22 percent) from other states (Colorado, Oregon, New Mexico) or unknown locations.

Comments were received from various organizations and unaffiliated individuals. Commenters included a variety of local businesses, state and local government agencies, mining industry representatives, as well as unaffiliated individuals and others. The preponderance of commenters were individuals (35 percent) with another 22 percent representing State Agency/ Elected officials. Businesses made up 22 percent and County Agency/Elected officials made up 9 percent of commenters (Table 7.1-2). Non-Governmental Organizations, Federal Agencies, and Tribal Officials/Members each made up less than 4 percent of the commenters.

Table 7.1-2 Affiliation Codes

Code	Affiliation	Number of Commenters
BUS	Business	5
CNT	County Agency/Elected Official	2
GOV	Federal Agency, Government Employees, Organizations, Unions	1
IND	Individual/Unaffiliated	8
LOC	Local Agency/Elected Official	0
NGO`	Non-Governmental Organization	1
STA	State Agency/Elected Official	5
TRB	Tribal Official/Member	1
UNI	University	0

The type of comment document (comment form, letter, ePlanning submittal, and email) was also tracked. Comment forms represented 20 percent of all comments received, letters represented 8 percent of all comments received, ePlanning website submittals represented 20 percent of all comments received, and e-mail represented 52 percent of all comments received.

7.1.3 Comment Analysis

A total of 25 comment documents was received during the DEIS review period. In addition, the EPA requested that the BLM include its scoping comment letter, for a total of 26 comment documents containing 253 individual comments. Comments included a variety of topics, ranging from general support of the project, to concerns pertaining to special status species. The majority of comments were in reference to water resources concern, special status species, and alternatives to proposed action concern.

Each comment letter was reviewed, comments were identified, and a type code was assigned to each comment to indicate the associated resource or concern so that comments could be sorted and addressed by the appropriate resource specialist.

Table 7.1-3 contains a list of comment type codes that were used to indicate each comment's associated resource or concern.

Table 7.1-3 Comment Type Codes

Code	General Issue Category
ALT	Alternatives to Proposed Action (development or additional) Concern
AQ	Air Quality Concern
CR	Cultural Resources Concern
CE	Cumulative Effects Concern
EJ	Environmental Justice
FPF	Forest Products and Fuels
GEN	General Comment/Concern
GEO	Geology and Minerals Concern
GHG/CC	Greenhouse Gas/Climate Change Concern
HAZ	Hazardous and Solid Waste Materials Concern
INF	Request for Additional Information
LST	Add to mailing list
LUA	Land Use and Access Conformance/Concern
M&M	Mitigation and Monitoring Concern
NAC	Native American Concern
NEG	General Comment, Negative
NS	Noise Concern
OPP-PA	Opposes Proposed Action
OPP-WRDA	Opposes Waste Rock Disposal Site Design Alternative
PA	Proposed Action
PAL	Paleontological Resources Concern
POS	General Comment, Positive
PRO	Process (comments referring to scoping or NEPA process)
REC	Recreation Concern
RNG	Range Resources (including rangeland health, grazing, wild horses and burros)
SAF	Public Health and Safety Concern
SOIL	Soil Resources and Reclamation Concern
SOC	Socioeconomics Concern
SSS	Special Status Species (plants and animals) Concern
SUP-PA	Supports Proposed Action
SUP-WRDA	Supports Waste Rock Disposal Site Design Alternative
TRAN	Transportation Concern
VEG	Vegetation (not including listed or sensitive species) Concern
VR	Visual Resources Concern
WH	Wild Horses
WLF	Wildlife (not including listed or sensitive species) and Wildlife Habitat Concern
WTR	Water Resources Concern

7.2 COMMENTS AND RESPONSES

7.2.1 General Revisions to the FEIS

In response to comments received on the DEIS, additions and revisions are reflected in this FEIS and are briefly described below.

Following signature of the Nevada Native Nations Land Act of 2016, the BLM revised the distance from the Plan area boundary to the northern boundary of the Duckwater Shoshone Reservation and clarified the distance to the community of Duckwater throughout the EIS.

In section 1.9 Authorizing Actions, the BLM clarified the description of reclamation bonding requirements. In the summary of the Plan of Operations in Chapter 2, the BLM added details from the Plan of Operations (Midway 2013a), its appendices, and historical documents regarding the management of leach solution, potentially acid generating waste rock, and TSF draindown solution during operation and closure. For clarity, the 33-acre area of existing Easy Junior Pit was subtracted from the total area of permanent disturbance (Table 2.3-1 and throughout the FEIS). The BLM also clarified the location of surface disturbance (inside or outside the Plan area) related to the Proposed Action power transmission line to the Pan Mine, the Southern Power Line Route Alternative, the proposed county road re-route, the Modified County Road Re-Route, and the Northwest Main Access Route (Table 2.3-1, Table 2.4-1 and throughout the FEIS). The estimated construction schedule was updated from "six to nine months" to "approximately one year". The BLM added text summarizing soil cover modeling performed for the Easy Junior Mine (CDM Federal Programs and CDM Constructors Inc. 2003), Pan Mine (Dwyer 2012) and the Gold Rock Project (Interralogic 2013b), along with a table summarizing soil cover thickness by facility. In Table 2.3-8 the BLM added more detailed information on Applicant-committed EPMs.

In the water resource sections in Chapters 3 and 4 of the FEIS, the BLM incorporated hydrogeologic information, groundwater modeling and pumping test results from a baseline hydrogeologic study performed in November 2014 (Hatch 2015), an addendum to that report prepared in 2016 (Hydrogeologica 2016), and clarified information on local springs. The BLM clarified the depth to groundwater in relation to proposed facilities. The BLM added details on waste rock sample results from the Pan Mine baseline geochemistry report (Interralogic 2012a) and the Gold Rock baseline geochemistry report (Interralogic 2013b) appended to the Plan of Operations (Midway 2013a). Figures in the water resource sections were updated to more clearly reflect current understanding of the hydrogeological setting and to include information from the baseline hydrogeologic report (Hatch 2015) and addendum (Hydrogeologica 2016). The BLM clarified text regarding geochemistry results for samples from the nearby Pan Mine. The BLM updated information on Midway's water rights permits in this section and throughout the document. In Chapter 4 of the FEIS, the BLM expanded and clarified the description of potential impacts to groundwater quantity and quality, including potential impacts to local springs and noted the distance from the toe of slope of the Western TSF to the nearest mapped perennial stream.

In the air quality sections in Chapters 3 and 4 of the FEIS, the BLM incorporated additional information on background air quality concentrations, including background concentrations of NO_x, CO and SO_2 measured at representative locations. In Chapter 4 of the FEIS, the BLM also incorporated a table showing estimated emissions due to construction activities along with information from the air quality assessment performed in October 2014 (EMA 2014b), including a table summarizing maximum model-predicted impacts of the Proposed Action related to Nevada ambient air quality standards. The BLM added information on the applicability of PSD, including a table presenting annual potential to emit emissions by stationary source category. In the air quality section in Chapter 5, the BLM incorporated tables presenting cumulative effects modeling results from the air quality assessment (EMA 2014a,b), along with information on mercury emissions from the air quality assessment (EMA 2014a,b).

The BLM also incorporated additional information on greenhouse gas emissions and climate change in the air quality sections in chapters 3 and 4, revised Table 4.7-5 to present metric tons per year of CO_2e, included text and a new table (new Table 4.7-6) on GHG emissions that would result from combustion of propane for heating and from generation of purchased power that would supply electricity to the mine site. The BLM added information on climate change to Chapter 5.

In the vegetation section in Chapter 4 of the FEIS, the BLM revised the duration of impact to vegetation from short-term to long-term to account for the time needed for shrubs and trees to re-establish in disturbed areas.

In the wildlife sections in Chapters 3 and 4 of the FEIS, the BLM incorporated the findings of the most recent regional studies on Greater Sage-Grouse, and added more detailed information on potential impacts to mule deer and Greater Sage-Grouse. In accordance with BLM-NV-2015-017 (BLM 2015a) and the GRSG LUPA (BLM 2015c) the BLM used the USGS 2014 Greater Sage-Grouse habitat mapping (USGS 2014f) to evaluate impacts to Greater Sage-Grouse, revising the acreages throughout the document. The BLM clarified the Applicant-committed EPMs that would be used to minimize impacts to wildlife including raptors. The BLM also refined mitigation measures to address residual impacts to Greater Sage-Grouse, pygmy rabbit, and ferruginous hawk. In the wildlife section in Chapter 5, the BLM added trend lek data and expanded and clarified the description of potential cumulative effects to Greater Sage-Grouse.

In the range resources section in Chapter 4, the BLM expanded the description of potential impacts, clarifying that vehicular collisions with livestock could result in animal mortality, adding an Applicant-committed EPM of installing cattle guards, and noting other potential impacts including noise impacts and an increase in recreational visitors to the area that could result in an increased number of dogs and subsequent disturbance of livestock. The BLM revised the calculation of AUMs, using ESDs, productivity factors, a slope factor where appropriate, and a utilization rate to estimate available, usable forage. The BLM also revised the weight of forage in one AUM from 800 lbs. to 1,000 lbs. The BLM added text to the mitigation subsection, noting that the BLM would work with the permittee, Midway and NDOW to develop range improvement projects that could offset some short term loss while not detrimentally impacting Greater Sage-Grouse habitat.

In the Native American Religious and Traditional Values section in Chapter 4, the BLM incorporated language from the Programmatic Agreement (Appendix 1B) regarding Tribal monitoring during construction.

In the land use and access section in Chapter 4, the BLM added text noting that the increase in the number of people accessing the project area related to mining activity may impact security of private property and require additional effort on the part of land owners and the local sheriff to maintain public safety and the security of private property.

In the socioeconomics sections in Chapters 3 and 4, the BLM expanded text regarding low income populations including the Duckwater Shoshone Tribe and regarding existing conditions in and impacts to residents of Eureka County.

In the environmental justice section in Chapter 4, the BLM expanded text regarding low income populations including the Duckwater Shoshone Tribe.

7.2.2 Public Comments and BLM Responses

Appendix 7A presents all of the specific comments that were received on the DEIS. It includes the comment document, comment number, and the BLM's response to the comment. Commenters had the option of requesting anonymity; the names of those who requested it appear blacked out in the comment document.

In responding to comments, every effort was made to address all questions, concerns, and other points presented by the commenter. The "Response" provided by BLM, in many cases, refers to information already contained in the DEIS, and provides an explanation or clarification using this information to respond to the comment. Where the comment has resulted in a change in the FEIS narrative, this is indicated in the BLM response. The responses also note where statements are made that are not specific comments on the EIS.

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CHAPTER 8
REFERENCES, ACRONYMS AND ABBREVIATIONS, GLOSSARY, AND INDEX

8.1 REFERENCES

Air Sciences. 2013. AirSciences. 2013. Table of Hourly Meteorological Data Collected at the Pan Mine During 2013. 209 pp.

Air Sciences. 2015. Audit Report, Gold Rock Project Meteorological Monitoring System. Project No. 260-2. September. 19 pp.

Alder and Hostetler. National Climate Change Viewer. Summary of White Pine County, Nevada. United States Geological Survey. [Web page]. Located at https://www2.usgs.gov/climate_landuse/clu_rd/nccv.asp. Accessed: October 6, 2016.

Aldridge, C.L. and M.S. Boyce. 2007. Linking occurrence and fitness to persistence: Habitat-based approach for endangered Greater Sage-Grouse. Ecological Applications 17(2): 508-526.

Alta Bay Ventures. 1991. 1990 Water Use Request, Mining. ID No. 02090. June 11, 1990.

Alta Gold Co (Alta Gold). undated. Figure 6. Easy Junior Project Cross Section E-E'. Scale: 1 in:200 ft and associated figure with USGS Green Springs, Nevada 1:24,000 topographic quadrangle map showing cross section location.

Alta Gold. 1991. Easy Junior Project NEV 89051 Water Pollution Control Permit Monitoring Report. April 11, 1991.

Alta Gold. 1993. Water Pollution Control Quarterly Monitoring Report, Third Quarter. Submitted to NDEP. October 12, 1993.

Alta Gold. 1994a. Easy Junior Project NEV89051 Water Pollution Control Permit Quarterly Monitoring Report (fourth quarter 1993). January 10, 1994.

Alta Gold. 1994b. Annual Report NEV 89051. March 8, 1994.

Alta Gold. 1995. Easy Junior NEV 89501 Water Pollution Control Permit Yearly and Quarterly Monitoring Report. March 28, 1995.

Alta Gold. 1996. Final Permanent Closure Plan for the Easy Junior Mine, Water Pollution Control Permit NEV 89051. February 1996. See GRALTA-EZ 02-08 WPCP NEV80951 Fnl Perm Closure Plan (Text) 1996.pdf.

Alta Gold. 1997a. Alta Gold Company Easy Junior Project Water Pollution Control Permit NEV 89051 Monitoring Report, Fourth Quarter and Annual. January 20, 1997.

Alta Gold. 1997b. Alta Gold Company Easy Junior Project Water Pollution Control Permit NEV 89051 Monitoring Report, Second Quarter 1997. July 2, 1997.

Alta Gold. 1998a. Alta Gold Company – Easy Junior Project Water Pollution Control Permit NEV89051 Request for Approval of Land Application Of Heap Rinsate/Drain-down Solution. January 26, 1998.

Alta Gold. 1998b. Alta Gold Company – Easy Junior Project Water Pollution Control Permit NEV89051 Monitoring Report, First Quarter 1998. April 9, 1998.

Alta Gold. 1998c. Alta Gold Company – Easy Junior Project Water Pollution Control Permit NEV89051 Monitoring Report, Third Quarter 1998. October 7, 1998.

Alta Gold. 1998d. Alta Gold Company – Easy Junior Project Water Pollution Control Permit NEV89051 Heap Rinsate/Drain-Down Solution Land Application Final Report of Activities thru September 1998. October 27, 1998.

Alta Gold. 1999a. Alta Gold Company – Easy Junior Project Water Pollution Control Permit NEV89051 Monitoring Report, Second Quarter 1999. July 8, 1999.

Alta Gold. 1999b. Attachment A. Documentation of Reclamation Activities for Surety Release and Annual Fee Reporting. August 1999. See GRALTA-EZ 03-07 CLOSURE Easy Jr. Closure 1999-2000.pdf.

Alta Gold. 2000a. Attachment A for Surety Release of Easy Junior Project N46-89-005P.

Alta Gold. 2000b. Alta Gold Company – Easy Junior Project Water Pollution Control Permit NEV89051 Monitoring Report, Fourth Quarter 1999. January 10, 2000.

Alta Gold. 2000c. Alta Gold Company – Easy Junior Project Water Pollution Control Permit NEV89051 Monitoring Report, First Quarter 2000. April 5, 2000.

Anderson, P. 2013. Personal communication [Nov 18 telephone conversation with E. Duvall, ARCADIS, Phoenix, Arizona. RE: fire history records for Easy Junior Mine]. Nevada State Forester, Division of Forestry, Carson City, Nevada. 1 pg.

Andrle, K. and P.S. Coates. 2014. May Progress Update – Sage-Grouse Research (S. Newark Valley). U.S. Geological Survey. Unpublished Report. 5 pp.

Arcadis. 2014. Scoping Summary for the Gold Rock Mine Project Environmental Impact Statement.

ASTM International (ASTM). 2005. Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. Designation E 1527-05.

Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute and APLIC. Washington, D.C. 227 pp.

APLIC. 2012. Reducing Avian Collisions with Power Lines. The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C. 184 pp.

APLIC. 2015. Best Management Practices for Electric Utilities in Sage-Grouse Habitat. Edison Electric Institute and APLIC. Washington, DC. June.

Atamian, M.T., J.S. Sedinger, J.S. Heaton, and E.J. Blomberg. 2010. Landscape-level assessment of brood rearing habitat for Greater Sage-Grouse in Nevada. Journal of Wildlife Management 74(7):1533-1543.

Australian Government Department of the Environment and Energy. 2005. Nitrogen Dioxide (NO2). 2005 Air Quality Fact Sheet. Department of the Environment and Heritage, 2005. [Web page]. Located at http://www.environment.gov.au/protection/publications. Accessed: March 22, 2017. 2 pp.

Bachmeier, Linda. 2013. Gate Clerk, City of Ely Municipal Utilities Board regional landfill. Personal communication with G. Blankenship, Blankenship Consulting LLC. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

Backensto, S.A. 2010. Common Ravens in Alaska's North Slope Oil Fields: An Integrated Study Using Local Knowledge and Science. Master's Thesis, University of Alaska Fairbanks. 166 pp.

Barney, M. A and Frischkenecht, N. C. 1974. Vegetation changes following fire in the pinyon-juniper type of west-central Utah. Journal of Range Management 27(2) 91-96.

Barrick. 2015. Barrick Announces Sale of Non-Core Assets for $720 Million. 3 pp. [Web page]. Located at http://www.barrick.com/investors/news/news-details/2015/Barrick-Announces-Sale-of-Non-Core-Assets-for-720-Million/default.aspx. Accessed: August 26, 2017.

Bayne, E.M., L. Habib, and S. Boutin. 2008. Impacts of chronic anthropogenic noise from energy-sector activity on abundance of songbirds in the boreal forest. Conservation Biology 22(5): 1186-1193.

Bennett, Shane. 1995. Gerald William Basalt Well Log 50235. [Web page]. Located at http://water.nv.gov/data/wellog/index.crm. Accessed: November 13, 2013.

Blackburn, W.H., P.T. Tueller, and R.E. Eckert Jr. 1968. Vegetation and Soils of the Duckwater Watershed. Max C. Fleischmann College of Agriculture, University of Nevada. In cooperation with U.S. Department of Interior Bureau of Land Management. May 1968. 87pp.

Blankenship Consulting LLC. 2009. Memorandum to Angelica D. Rose, Planning and Environmental Coordinator, US BLM Battle Mountain District. Subject: Supplemental information to address Eureka County concerns with the June 2, 2008 Mount Hope Project Socioeconomic Assessment. Appendix E to U.S. Bureau of Land Management. 2012. Mount Hope Project Final Environmental Impact Statement.

Blankenship Consulting LLC and Sammons/Dutton LLC. 2013. Gold Rock Project Baseline Socioeconomic and Environmental Justice Conditions. October 31. 64 pp.

Blankenship, G. 2014. Personal communication [Aug 28 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: MGR Gold Rock Mine Project request for input on carpooling]. Socioeconomist and Manager, Blankenship Consulting LLC, Denver, Colorado.

Blickley, J.L. 2013. The Effects of Anthropogenic Noise on Greater Sage-Grouse (Centrocercus urophasianus) Lek Attendance, Communication, and Behavior. Dissertation, University of California, Davis, California. 132 pp.

Blickley, J.L., D. Blackwood, and G.L. Patricelli. 2012a. Experimental evidence for the effects of chronic anthropogenic noise on abundance of Greater Sage-Grouse at leks. Conservation Biology 26(3):461-471.

Blickley, J.L., K.R. Word, A.H. Krakauer, J.L. Phillips, S.N. Sells, C.C. Taff, J.C. Wingfield, and G.L. Patricelli. 2012b. Experimental chronic noise is related to elevated fecal corticosteroid metabolites in lekking male Greater Sage-Grouse (Centrocercus urophasianus). PLoS ONE 7: e50462.

Blomberg, E.J., J.S. Sedinger, M.T. Atamian, and D.V. Nonne. 2012. Characteristics of climate and landscape disturbance influence the dynamics of Greater Sage-Grouse populations. Ecosphere 3(6): 55.

Blomberg, E.J., D. Gibson, J.S. Sedinger, M.L. Casazza, and P.S. Coates. 2013. Intraseasonal variation in survival and probable causes of mortality in Greater Sage-Grouse Centrocercus urophasianus. Wildlife Biology 19(4): 347-357.

Blum, M.E., K.M. Stewart, and C. Schroeder. 2015. Effects of large-scale gold mining on migratory behavior of a large herbivore. Ecosphere 6(5): 74.

Del Bradley, P.V., M.J. O'Farrell, J.A. Williams, and J.E. Newmark. Editors. 2006. The Revised Nevada Bat Conservation Plan. Nevada Bat Working Group. Reno, Nevada. 216 pp.

Braun, Clait E. 1998. Sage Grouse Declines in Western North America: What are the problems? Colorado Division of Wildlife. Reprinted from Proc. Western Assoc. State Fish and Wildl. Agencies 78:000-000. [Web page]. Located at http://www.rangenet.org/projects/grouse/grouse01.html. Accessed: March 3, 2014.

Braun, C.E., J.W. Connelly and M.A. Schroeder. 2005. Seasonal Habitat Requirements for Sage-grouse: Spring, Summer, Fall, and Winter. In: Sage-grouse Habitat Restoration Symposium Proceedings. PP 38-42. June 4-7, 2001. Nancy L. Shaw, Mike Pellant, Stephen B. Monsen (Eds.). Boise, ID. Fort Collins, Co. U.S. Department of Agriculture, Forest Service Proceedings RMRS-P-38.2005.

Braun, C.E., O.O. Oedekoven, and C.L. Aldridge. 2002. Oil and gas development in western North America: Effects on sagebrush steppe avifauna with particular emphasis on Greater Sage-Grouse. Transactions of the 67th North American Wildlife and Natural Resources Conference. Pages 337-349.

Bui, Thuy-Vy D., John M. Marzluff, and Bryan Bedrosian. 2010. Common raven activity in relation to land use in western Wyoming: implications for Greater Sage-Grouse reproductive success. The Condor 112(1): 65-78.

Bumby, S., E. Druzhinina, R. Feraldi, D. Werthmann, R. Geyer, and J. Sahl. 2010. Life Cycle Assessment of Overhead and Underground Primary Power Distribution. Environmental Science and Technology. Volume 44, pages 5587–5593. June. 7 pp.

CDM Federal Programs and CDM Constructors, Inc. 2003. Final Investigation Report, Easy Junior Mine Site, White Pine County, Nevada. Prepared for Sacramento District Army Corps of Engineers Restoration of Abandoned Mine Sites (RAMS) Contract No. DACW05-00-D-006 Task Order No. 005. Prepared by CDM Federal Programs Sacramento, CA and CDM Constructors Inc. Reno, NV. December 2003.

Chambers, Jeanne C. 2008. Climate change and the Great Basin. In: Chambers, J. C.; N. Devoe, and A. Evenden (Eds.). Collaborative management and research in the Great Basin examining the issues and developing a framework for action. (Gen. Tech. Rep. RMRS-GTR-204). Fort Collins, CO: U.S. Forest Service, Rocky Mountain Research Station, pp. 29-32.

Christiensen Drilling, Inc. 1989. Easy Junior Well log 91086. September 10.

City of Ely. 2011. City of Ely Final Budget for the Fiscal Year Ending June 30, 2012. 48 pp.

City of Ely. 2013. City of Ely Final Budget for the Fiscal Year Ending June 30, 2014. 51 pp.

Coats, R.R. 1987. Geology of Elko County, Nevada. Nevada Bureau of Mines and Geology Bulletin 101. 114 pp. plus 1:250,000-scale map.

Coates, P.S. and D.J. Delehanty. 2010. Nest Predation of Greater Sage-grouse in Relation to Microhabitat Factors and Predators. Journal of Wildlife Management, 74(2): 240-248.

Coates, P.S., K.M. Andrle, K.B. Howe, and M.L. Casazza. 2013. Annual Data Summary 2013: Monitoring and research on Greater Sage-Grouse in the Newark and Cathedral Valleys of Eastern Nevada: U.S. Geological Survey. Unpublished Report. 41 pp.

Coates, P.S., M.L. Casazza, B.E. Brussee, M.A. Ricca, K.B. Gustafson, C.T. Sanchez-Chopitea Overton, E. Kroger. 2014. Spatially explicit modeling of Greater Sage-Grouse (*Centrocercus urophasianus*) habitat in Nevada and northeastern California—A decision-support tool for management: US Geological Survey Open-File Report 2014-1163, 83 p., http://dx.doi.org/10.3133/ofr2014-1163.

Coates, P.S., K.M. Andrle, K.B. Howe, D.A. Munoz, and M.L. Casazza. 2015a. Annual Data Summary 2013-2014: Monitoring and Research on Greater Sage-Grouse in the Pancake and White Pine Mountains of Eastern Nevada. U.S. Department of the Interior, U.S. Geological Survey, Western Ecological Research Center, Dixon, California. January 22. 57 pp.

Coates, P.S., K.M. Andrle, and M.L. Casazza. 2015b. Annual Data Summary 2013-2015: Monitoring and Research on Greater Sage-Grouse in the Pancake and White Pine Ranges of Eastern Nevada. U.S. Department of the Interior, U.S. Geological Survey, Western Ecological Research Center, Dixon, California. December 21. 57 pp.

Coates, P.S., M.L. Casazza, B.E. Brussee, M.A. Ricca, K.B. Gustafson, E. Sanchez-Chopitea, K. Mauch, L. Niell, S. Gardner, S. Espinosa, and D.J. Delehanty. 2016. Spatially explicit modeling of annual and seasonal habitat for greater sage-grouse (Centrocercus urophasianus) in Nevada and Northeastern California—an updated decision-support tool for management: U.S. Geological Survey data release, http://dx.doi.org/10.5066/F7CC0XRV.

Coffin, A.W. 2007. From roadkill to road ecology : A review of the ecological effect of roads. Journal of Transport Geography 15: 396-466.

Col-Tech EnviroLabs. 1999. NDEP Profile II for Alta Gold Company. January 7, 1999.

Col-Tech EnviroLabs. 2000. NDEP Profile II for Alta Gold Company. May 15, 2000.

Collins, C.P. and T.D. Reynolds. 2005. Ferruginous Hawk (Buteo regalis): A Technical Conservation Assessment. USDA Forest Service, Rocky Mountain Region. 64 pp.

Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage Greater Sage-Grouse populations and their habitats. Wildlife Society Bulletin 28(4): 967-985.

Connelly, J.W., S.T. Knick, M.A. Schroeder, and S.J. Stiver. 2004. Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats. Western Association of Fish and Wildlife Agencies. Unpublished Report. Cheyenne, Wyoming. 610 pp.)

Coolbaugh, M., Zehner, R., Kreemer, C., Blackwell, D., Oppliger, G., Sawatzky, D., Blewitt, G., Pancha, A., Richards, M., Helm-Clark, C., Shevenell, L., Raines, G., Johnson, G., Minor, T., and T. Boyd. 2005. Geothermal Potential Map of the Great Basin Region, Western United States. Nevada Bureau of Mines and Geology Map 161. Scale 1:1,000,000.

Coombs, Cody. 2014a. Personal communication [Jun 16 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: commercial fuelwood harvest area permits]. Hazardous Fuels Manager, BLM, Ely, Nevada. 2 pp.

Coombs, Cody. 2014b. Personal communication [Aug 25 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: forest fuel products]. Hazardous Fuels Manager, BLM, Ely, Nevada. 4 pp.

Copeland, H.E., A. Pocewicz, D.E. Naugle, T. Griffiths, D. Keinath, J. Evans, and J. Platt. 2013. Measuring the effectiveness of conservation: A novel framework to quantify the benefits of Greater Sage-Grouse conservation policy and easements in Wyoming. PLoS ONE 8(6): e67261.

Crabtree, David. 2016. Personal communication [Dec 8 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: Gold Rock Mine Project EIS and greenhouse gas emissions associated with energy use]. Senior Vice President, General Counsel, Deseret Power, South Jordan, Utah. 4 pp.

Cummings, Rob. 2013. McGill Ruth Consolidated Sewer & Water General Improvement District. Personal communication with G. Blankenship, Blankenship Consulting LLC. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

Damele, Ron. 2011. Eureka County Public Works Director. Overview of the "Summary Report of Existing Municipal Water Conditions in Southern Eureka County." PowerPoint Presentation. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

Damele, Ron. 2013. Eureka County Public Works Director. Personal communication with G. Blankenship, Blankenship Consulting LLC. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

Davies, K.W., C.S. Boyd, J.L. Beck, J.D. Bates, and T.J. Svejcar. 2011. Saving the sagebrush sea: An ecosystem conservation plan for big sagebrush plant communities. Biological Conservation 144: 2573-2584.

DeBurle, M. 2017. Personal communication [Feb 6 e-mail correspondence with A. Gault, Bureau of Land Management, Ely, Nevada. RE: Zero Baseline Modeling Values]. Nevada Division of Environmental Protection Bureaus of Air Quality, Carson City, Nevada, 1 pg.

Derrick, Jim. 2013. White Pine County Fire Protection District. Personal communication with G. Blankenship, Blankenship Consulting LLC. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

Dinkins, Jonathan B. 2013. "Common Raven Density and Greater Sage-Grouse Nesting Success in Southern Wyoming: Potential Conservation and Management Implications". All Graduate Theses and Dissertations. Paper 1700. http://digitalcommons.usu.edu/etd/1700

DiTomaso, J.M. 2000. Invasive weeds in rangelands: Species, impacts, and management. Weed Science 48: 255-265.

Dobra, John L.. 2009. Economic Overview of Nevada's Minerals Industry, 2009. [Web page]. Located at http://www.nevadamining.org/issues_policy/reports.php. Accessed: September 25, 2017. 36 pp.

Dobra, John L. 2011. An Economic Overview of Nevada's Minerals Industry, 2010-2011. [Web page]. Located at https://www.nevadamining.org/issues_policy/pdfs/NVMA _2010_Economic_Overview.pdf. Accessed: September 25, 2017. 34 pp.

Dolezal, Bob. 2013. White Pine County School District Superintendent. Personal communication with R. Dutton, Sammons/Dutton Consulting LLC. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

Dwyer Engineering, LLC. 2012. Modeling Report In Support Of A Soil Cover Design, Midway Gold, Eureka County, Nevada. January. 21 pp.

Easterling, David R. and Michael F. Wehner. 2009. Is the climate warming or cooling? Geophysical Research Letters, Vol. 36, L08706, doi:10.1029/2009GL037810, 2009. American Geophysical Union. 3 pp.

Eastley, Joni. 2011. Nye County Commissioner, Tonopah District. Personal communication with G. Blankenship, Blankenship Consulting LLC. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

EcoSynthesis Scientific & Regulatory Services, Inc. (EcoSynthesis). 2013. Midway Gold U.S. Inc.'s Gold Rock Project Additional Baseline: Soils. December 22. 23 pp.

EcoSynthesis and Wildlife Resource Consultants (WRC). 2012a. Midway Gold U.S. Inc.'s Gold Rock Project, Biological Baseline Studies 2011. Report prepared for Midway Gold U.S. Inc., Englewood, Colorado. 55 pp.

EcoSynthesis and WRC. 2012b. Midway Gold U.S. Inc.'s Gold Rock Project, Biological Baseline Studies: Summary of 2012 Results. Report prepared for Midway Gold U.S. Inc., Englewood, Colorado. 23 pp.

EcoSynthesis and WRC. 2013. Midway Gold U.S. Inc.'s Gold Rock Project Biological Baseline Studies 2011–2013. Report prepared for Midway Gold US Inc., Englewood, Colorado. November 2013. 95 pp.

Ehni. 2014. Mariagnes 24 Hour Chronology, Well Completion. 1 pg.

Eisler, R. and S.N. Wiemeyer. 2004. Cyanide hazards to plants and animals from gold mining and related water issues. Reviews of Environmental Contamination and Toxicology 183: 21-54.

Eldridge, J., Redente, E., and Mark Paschke. 2012. The Use of Seedbed Modifications and Wood Chips to Accelerate Restoration of Well Pad Sites in Western Colorado, U.S.A. Restoration Ecology. Vol. 20, No. 4, pp. 524-531. July 2012.

Elias, Becky, L. Shipley, R. Sayler, and R.S. Lamson. 2006. Mating and Parental Care in Captive Pygmy Rabbits. Journal of Mammology, 87(5):921-928, October 2006. [Web page]. Located at http://jmammal.oxfordjournals.org/. Accessed: November 8, 2016. 8 pp.

Elko County Public Land Users Advisory Committee (ECPLUAC). 2008. Elko County Public Lands Policy Plan. Available online at: http://www.lands.nv.gov/docs/SLUPA/ElkoPlan.pdf. Accessed January 17, 2017.

Elko Daily Free Press (Elko Daily). 2014. Bald Mountain continues work to expand. [Web page]. Located at http://elkodaily.com/mining/bald-mountain-continues-work-to-expand/article_d165bad4-7a75-11e3-8715-0019bb2963f4.html. Accessed: May 16, 2014.

Ellis, K.L. 1984. Behavior of lekking Greater Sage-Grouse in response to a perched golden eagle. Western Birds 15: 37-8.

Ely Gold & Minerals Inc. (EGM). 2014. Ely Gold Properties. Green Springs Project. [Web page]. Located at http://www.elygoldandminerals.com/s/GreenSprings.asp. Accessed: May 19, 2014.

Emslie, S.D. and N.J. Czaplewski. 1985. A New Record of Giant Short-Faced Bear, Arctodus simus, from Western North America with a Re-evaluation of its Paleobiology. Natural History Museum of Los Angeles County Contributions in Science. 371:1-12.

Engineering Dynamics Inc. (EDI). 2012. Noise Assessment Midway Gold Rock Exploration Project White Pine County, Nevada. March. 37 pp.

Environmental Management Associates (EMA). 2014a. Memorandum from Dwight Carey, EMA to Carol Adams, Midway dated September 19, 2014: Preliminary Estimates of Air Pollutant Emissions from the Gold Rock Mine. 89 pp.

EMA. 2014b. Air Quality Assessment Report, Midway Gold US Inc., Gold Rock Mine, White Pine County, Nevada. October 2014. 775 pp.

Estes-Zumpf, Wendy and J.L. Rachlow. 2009. Natal Dispersal by Pygmy Rabbits (Brachylagus Idahoensis). Journal of Mammology, 90(2):363-372, April 2009. [Web page]. Located at http://jmammal.oxfordjournals.org/. Accessed: November 8, 2016. 10 pp.

Eureka County. 2010. Eureka County Master Plan 2010. Eureka County, Nevada. [Web page]. Located at http://www.co.eureka.nv.us/pdf/Master_Plan_Final_2010.pdf. Accessed: July 2, 2012. Pages 6-61 and 6-62.

Eureka County. 2012a. Socioeconomic Conditions and Trends Update - 2012 Update. [Web page]. Located at http://www.yuccamountain.org/trends12/cover.htm. Accessed: August 29, 2013.

Eureka County. 2012b. Comprehensive Annual Financial Report. County of Eureka, State of Nevada. For the Fiscal Year Ended June 30, 2012. [Web page]. Located at www.co.eureka.nv.us/audit/Eureka%20FS%202012.pdf. Accessed: November 25, 2013.

Eureka County. 2012c. Eureka County Final Budget for the Fiscal Year Ending June 30, 2013. [Web page]. Located at http://nsla.nevadaculture.org/statepubs/epubs/31428003048226-2012-2013.pdf. Accessed: September 10, 2013.

Eureka County. 2013a. Eureka County Volunteer Fire Department. [Web page]. Located at http://www.co.eureka.nv.us/Fire/Personnel.html. Accessed: November 25, 2013

Eureka County. 2013b. Eureka County Emergency Medical Service. [Web page]. Located at http://www.co.eureka.nv.us/ems/index_website/index.html. Accessed: November 25, 2013.

Eureka County. 2013c. Eureka County Final Budget for the Fiscal Year Ending June 30, 2014. [Web page]. Located at http://nsla.nevadaculture.org/statepubs/epubs/31428003048226-2013-2014.pdf. Accessed: September 10, 2014

Eureka County. 2017. Comment Form, Review of Gold Rock Mine Project FEIS, Cooperating Agencies and Tribe, August 10 - August 22, 2017, Eureka County. August. 5 pp.

Eureka County Board of Commissioners (ECBC). 2011a. Eureka County Board of Commissioners Minutes: Special Housing Meeting. [Web page]. Located at http://www.co.eureka.nv.us/comish/minutes/01-26-11MINUTES(HousingMeeting).pdf. Accessed: January 26, 2011.

ECBC. 2011b. Eureka Canyon Subdivision Making Progress. November 2011. [Web page]. Located at http://www.co.eureka.nv.us/housing/Nov2011newsletterrev6FINAL.pdf. Accessed: May 23, 2014.

Evangelista, P.H. A.W. Crall, and E. Bergquist. 2011. Invasive Plants and their Response to Energy Development. Pages 115-129 in Naugle, D.E. ed. Energy Development and Wildlife Conservation in Western North America. Island Press, Washington, D.C. 344 pp.

Federal Emergency Management Agency (FEMA). 2010. National Flood Insurance Program Flood Insurance Rate Map, Nye County, Nevada and Incorporated Areas. Panel 900 of 8900. Map Number 32023C0900E. Effective Date February 17, 2010.

Federal Highway Administration (FHWA). 2006. FHWA Roadway Construction Noise Model User's Guide (Final Report). U.S. Department of Transportation. January. 30 pp.

Federal Motor Carrier Safety Administration (FMCSA). 2001. Comparative Risks of Hazardous Materials and Non-Hazardous Materials Truck Shipment Accidents/Incidents. Final Report. Battelle. Columbus, Ohio. March 2001. 190 pp.

Finch, D.M. 2012. Climate Change in Grasslands, Shrublands, and Deserts of the Interior of the American West: a Review and Needs Assessment. General Technical Report RMRS--GTR-285. Fort Collins, CO: U.S. Forest Service, Rocky Mountain Research Station.

Flannery, C. 2013. Personal communication [Nov 15 telephone conversation with E. Duvall, ARCADIS, Phoenix, Arizona. RE: records on spills, releases, fires or underground storage tank removal for Easy Junior Mine]. White Pine County Fire District Fire Chief, White Pine County, Ely, Nevada. 1 pg.

Fox, Sue. 2014. Personal communication [Dec 2 e-mail to E. Duvall, Arcadis, Phoenix, Arizona. RE: request for input on several wildlife comments-eagle nest location]. Principal/Wildlife Biologist, Wildlife Resource Consultants, Cedarville, California. 3 pp. Francis, C.D., C.P. Ortega, and A. Cruz. 2009. Noise pollution changes avian communities and species interactions. Current Biology 19: 1415-1419.

Frank-Churchill. M. 2013. Comments stated during Gold Rock Mine Project EIS agency scoping summary, issue identification, and alternatives development meeting regarding cultural resources and Native American religious and traditional values. Ely, Nevada. December 19, 2013.

Freeze, R.A. and J.A. Cherry. 1979. Groundwater: Englewood Cliffs, NJ, Prentice-Hall. 604 pp.

Gardner, Gerald. 2013. Personal communication [Nov 13 and 18 telephone conversation with E.Duvall, ARCADIS, Phoenix, Arizona. RE: releases, spills for the former Easy Junior Mine]. AML Coordinator, NDEP Carson City Abandoned Mine Lands, Carson City, Nevada. 2 pp.

Garfin, G., G. Franco, H. Blanco, A. Comrie, P. Gonzalez, T. Piechota, R. Smyth, and R. Waskom. 2014. Ch. 20: Southwest. *Climate Change Impacts in the United States: The Third National Climate Assessment*, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 462-486. doi:10.7930/J08G8HMN. [Web page]. Located at http://nca2014.globalchange.gov/report/regions/southwest. Accessed: July 6, 2016.

Garside, L.J., Hess, R.H., Fleming, K.L., and B.S. Weimer. 1988. Oil and Gas Developments in Nevada. Nevada Bureau of Mines and Geology Bulletin 104.

Garza, Jim. 2013. Director, White Pine County Community and Economic Development Office. Personal communication with G. Blankenship, Blankenship Consulting LLC. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

General Moly. 2014. General Moly Properties, Mt. Hope. [Web page]. Located at http://www.generalmoly.com/properties_mt_hope.php. Accessed: October 8, 2014.

Giambastiani, Dayna. 2013. A Historic Context for Midway Gold Corporation's Pan and Gold Rock Project Areas, Pancake Range, White Pine County, Nevada. NVCRIS No. 18420-03. ASM Affiliates, Inc., Reno, NV. Prepared for BLM Egan Field Office, Ely, NV. 63 pp. plus appendices.

Giambastiani, Dayna and Oliver Patsch. 2013. A Class III Cultural Resources Inventory of 6,875 Acres for Midway Gold's Phase II Gold Rock Project, Pancake Range, White Pine County, Nevada. BLM CRIR No. 4-1997; NVCROS No. 18420-02. ASM Affiliates, Inc., Reno, NV. Prepared for BLM Egan Field Office, Ely, NV. 216 pp. plus appendices. [CONFIDENTIAL]

Global Resource Engineering (GRE). 2014. NI 43-101 Technical Report Updated Mineral Resource Estimate for the Gold Rock Project White Pine County, Nevada. May 29, 2014. 126 pp.

Great Basin Bird Observatory (GBBO). 2010. Nevada Comprehensive Bird Conservation Plan, ver. 1.0. Great Basin Bird Observatory, Reno, NV. 622 pp.

GBBO. 2012. Bird Population Responses to Projected Effects of Climate Change in Nevada: An Analysis for the 2012 Revision of the Nevada Wildlife Action Plan.

Great Basin National Heritage Area Partnership (GBNHAP). 2011. Great Basin National Heritage Area Management Plan, September 23, 2011. [Web page]. Located at http://www.greatbasinheritage.org/. Accessed: November 15, 2013).

Green, Tony. 2013. Nevada Rural Housing Authority. Personal communication with G. Blankenship, Blankenship Consulting LLC. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

Gustavson Associates (Gustavson). 2012. NI 43-101 Technical Report on Resources, Gold Rock Project, White Pine County, Nevada. Prepared for Midway Gold Corp. Effective Date: February 29, 2012; updated November 29, 2012. 109 pp.

Habib, L., E.M. Bayne, and S. Boutin. 2007. Chronic industrial noise affects pairing success and age structure of ovenbirds Seiurus aurocapilla. Journal of Applied Ecology 44: 176-184.

Hagen, C. 2005. Greater Sage-grouse Conservation Assessment and Strategy for Oregon: A Plan to Maintain and Enhance Populations and Habitat. Oregon Department of Fish and Wildlife, Salem, Oregon. 160 pp.

Hardcastle, Jeff. 2013. Nevada County Population Projections 2013 to 2032 Based on the Last Estimate Year of 2012. Nevada State Demographer's Office. October 1.

Harrill, J.R. and D.E. Prudic. 1998. Aquifer Systems in the Great Basin Region of Nevada, Utah, and Adjacent States – Summary Report. USGS Professional Paper 1409-A.

Hatch Associates Ltd. 2015. Midway Gold US Inc. Gold Rock Project Baseline Hydrogeology Report. March 27. 54 pp.

Heilweil, V.M. and L.E. Brooks (eds). 2011. Conceptual Model of the Great Basin Carbonate and Alluvial Aquifer System. U.S. Geological Survey Scientific Investigations Report 2010-5193, 191 p.

Herrera-Montes, M.I. and T.M. Aide. 2011. Impacts of traffic noise on anuran and bird communities. Urban Ecosystems 14(3): 415-427.

Hess, R., Davis, D., and K. Boldi. 2008. Oil and Gas Well Information for Nevada. [Web page]. Located at http://www.nbmg.unr.edu/lists/oil/oil.htm. Accessed: November 13, 2013. Updated: October 27, 2008.

Hess, R.H., Henson, M.A., Davis, D.A., Limerick, S.H., Siewe, S.S., and M. Niles. 2011. Oil and gas well information for Nevada - 2011 update: Nevada Bureau of Mines and Geology Open-File Report 11-6. Available at: http://www.nbmg.unr.edu/Oil&Gas/NVWellInfo.html. Accessed: October 3, 2014.

Holloran, M.J. 2005. Greater Sage-grouse (Centrocercus urophasianus) Population Response to Natural Gas Field Development in Western Wyoming. Ph.D. Dissertation, University of Wyoming, Laramie, WY.

Hose, R.K. and M.C. Blake, Jr. 1976. Geology and Mineral Resources of White Pine County, Nevada – Part I – Geology. Nevada Bureau of Mines and Geology Bulletin 85. Pages 1-35.

Humboldt-Toiyabe National Forest (HTNF). 2011. Humboldt-Toiyabe National Forest Climate Change Vulnerability Report, April 2011.

Hummer, N. 2014. Personal communication [May 29 telephone conversation with T. Corbett, ARCADIS, Highlands Ranch, Colorado. RE: ARCADIS request of GIS data from Tonopah District]. GIS Coordinator, BLM Battle Mountain District Office, Battle Mountain, Nevada. 1 pg.

Humphrey, F.L. 1960. Geology of the White Pine Mining District, White Pine County, Nevada. Nevada Bureau of Mines and Geology Bulletin 57. 119 pp.

HydroGeoLogica, Inc. 2016. Draft Gold Rock Project Baseline Hydrogeology Addendum. August 8. 7 pp.

Intergovernmental Panel on Climate Change (IPCC). 2013. Climate Change 2013, The Physical Science Basis, Headline Statement from the Summary for Policymakers. [Web page]. Located at http://www.climatechange2013.org/images/uploads/WG1AR5_Headlines.pdf. Accessed: November 14, 2013.

Interralogic 2012a. Midway Gold US Inc. Final Baseline Geochemistry Report, Pan Project, Nevada. Prepared for Midway Gold US Inc. June. 55 pp.

Interralogic. 2012b. Gold Rock Final Groundwater Monitoring Plan, prepared for Midway Gold US Inc. October. 29pp.

Interralogic. 2013a. Midway Gold US Inc. Groundwater Monitoring Plan, Pan Project, Nevada. Prepared for Midway Gold US Inc. January. 28 pp.

Interralogic. 2013b. Midway Gold US Inc. Draft Baseline Geochemistry and Waste Rock Handling Report Gold Rock Project, Nevada. February. 82pp.

Interralogic. 2013c. Draft Memorandum – Gold Rock Cover Infiltration Evaluation. To: Tom Williams and Rick Moritz – Midway Gold Corporation. From: Milos Novotny and Brent Johnson – Interralogic, Inc. August 7. 17pp.

J.C. Brennan and Associates, Inc. 2013a. Baseline Noise Assessment, Midway Gold Pan Mine Project, White Pine County, Nevada. May 29. 77 pp.

J.C. Brennan and Associates. 2013b. Addendum to the Baseline Noise Assessment, Midway Gold Pan Mine Project, White Pine County, Nevada. July 17. 31 pp.

Jacobi, W.R., B.A. Goodrich, and R.D. Koski. 2009. Environmental effects of magnesium chloride based dust suppression products on roadside soils, vegetation and stream water chemistry. Colorado State University, Agricultural Experiment Station, Technical Report, TR09-04,185pp. [Web page]. Located at http://www.colostate.edu/Depts/AES/Pubs/pdf/tr09-4.pdf. Accessed: October 14, 2014.

Jass, C.N. 2007. New Perspectives on Pleistocene Biochronology and Biotic Change in the East-Central Great Basin: An Examination of the Vertebrate Fauna from Cathedral Cave, Nevada. Ph. D Thesis. University of Texas, Austin. 391 pp.

Jenkins, Ron. 2013. City of Ely Water and Wastewater Department. Personal communication with G. Blankenship, Blankenship Consulting LLC. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

Juncosa, A. 2014. Personal communication [Oct 13 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: MGR additional comments on Sept 22, 2014 ADEIS]. Senior Ecologist, Ecosynthesis Scientific & Regulatory Services, Inc., Truckee, California. 2 pp.

Juncosa, A. 2015. Personal communication [Jul 18 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: MGR EPA response]. Senior Ecologist, Ecosynthesis Scientific & Regulatory Services, Inc., Truckee, California. 1 pg.

Juncosa, A. 2017. Personal communication [Sep 15 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: comment NDOW-47 herbaceous species]. Senior Ecologist, Ecosynthesis Scientific & Regulatory Services, Inc., Truckee, California. 1 pg.

Kappler, Charles J., compiler and editor. 1904. Treaty with the Western Shoshonee, 1863. Indian Affairs: Laws and Treaties, Volume II, Treaties, pages 851 to 853. [Web page]. Located at http://digital.library.okstate.edu/kappler/Vol2/treaties/sho0851.htm. Accessed: December 30, 2013.

Knick, S.T., S.E. Hanser, and K.L. Preston. 2013. Modeling ecological minimum requirements for distribution of Greater Sage-Grouse leks: implications for population connectivity across their western range, U.S. Ecology and Evolution 2013; 3(6): 1539-1551.

Knight, Patricia. 2013. Tribal Manager, Duckwater Shoshone Tribe. Personal communication with G. Blankenship, Blankenship Consulting LLC. September 24, 2013. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

Kreidler, Miles. 2014. Personal communication [Jun 20 telephone conversation with E. Duvall, ARCADIS, Phoenix, Arizona. RE: Authorized Exploration, Rights of Way, Robinson Mine]. Minerals Specialist, BLM Egan Field Office, Ely, Nevada. 1 pg.

Kristan, W.B. and W.I. Boarman. 2007. Effects of anthropogenic developments on common raven nesting biology in the west Mojave Desert. Ecological Applications 17(6): 1703-1713.

LaGory, Kirk, Young-Soo Chang, Timothy Reeves, Richard Liebich, and Karen Smith. 2001. A study of the effects of gas well compressor noise on breeding bird populations of the Rattlesnake Canyon Habitat Management Area, San Juan County, NM. June 2001: Report DOE/BC/W-31-109-ENG-38-10. US Department of Energy. 81 pp.

LANDFIRE. 2013. LANDFIRE Existing Vegetation Type layer. (June 2013 last update). U.S. Department of Interior, Geological Survey. [Web page]. Located at http://landfire.cr.usgs.gov/viewer/. Accessed: May 8, 2013.

Larrucea, E.S. and P.F. Brussard. 2008. Habitat Selection and Current Distribution of the Pygmy Rabbit in Nevada and California. Journal of Mammalogy, 89(3):691-699. (3-50/3.9)

LeLacheur, Eric. 2012. Personal communication [2012 e-mail to B. Johnson, Interralogic, Fort Collins, Colorado. RE: Summary of holes deeper than 1000 feet.] Geologist, Midway Gold U.S. Inc., Ely, Nevada. 1 pg.

Lemich, Mike. 2011. Application for Permit to Appropriate the Public Waters of the State of Nevada. May 9, 2011. 3 pp.

Leonard M.L., A.G. Horn, and A. Mukhida. 2005. False alarms and begging in nestling birds. Anim. Behav.69, 701–708.

Lichtler, M. 2013. Personal communication [Aug 19, 2013 e-mail to A. Haraminac, ARCADIS, Lakewood, Colorado. RE: Annotated version of Ely District Special Status Species 2012 Dated March 12, 2012]. Wildlife Biologist, BLM-Egan FO, Ely, Nevada. 10 pp.

Lichvar, R.W. and S.M. McColley. 2008. A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States. A Delineation Manual. August.

Loehman, R. 2010. Understanding the Science of Climate Change: Talking Points-Impacts to Arid Lands. Natural Resource Report NPS/NRPC/NRR--2010/209. National Park Service, Fort Collins, Colorado.

Lowrie, Mark. 2013a. Personal communication [Nov 22 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: Duckwater Allotment Green Springs Use Area Grazing Permit Summary]. Range Specialist, BLM-Egan FO, Ely, Nevada. 3 pp.

Lowrie, Mark. 2013b. Personal communication [Nov 22 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: Rangeland Standards and Guidelines Achievement Summary Duckwater Allotment (0701) Bull Corner/Poison Patch Use Area]. Range Specialist, BLM-Egan FO, Ely, Nevada. 3 pp.

Lowrie, Mark. 2013c. Personal communication [Nov 16 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: 2011 information about grazing allotments]. Range Specialist, BLM-Egan FO, Ely, Nevada. 5 pp.

Lundmark, K.W., G.M. Pohll, and R.W.H. Carrol. 2007. A Steady-State Water Budget Accounting Model for the Carbonate Aquifer System in White Pine County, Nevada, and Adjacent Areas in Nevada and Utah. DHS Publication No. 41235. June.

Lyon A.G., and S.H. Anderson. 2003. Potential Gas Development Impacts on Sage-grouse Nest Initiation and Movement. Wildlife Society Bulletin, 31:486–491.

Lystrup, Sandy. 2016. Personal communication [Nove 11 and 14 e-mail correspondence with N. Lee, ARCADIS, Highlands Ranch, Colorado. RE: Request for Utility Usage Data]. Usage specialist, Suburban Propane, Ely, Nevada. 3 pp.

Mabey, T.J. 2013. Personal communication [Dec 23 telephone conversation with E. Duvall, ARCADIS, Phoenix, Arizona. RE: forest products]. Ely District forester, BLM, Ely, Nevada. 2 pp.

McClure, C.J.W., H.E. Ware, J. Carlisle, G. Kaltenecker, and J.R. Barber. 2013. An experimental investigation into the effects of traffic noise on distributions of birds: avoiding the phantom road. Proceedings of the Royal Society B 280: 20132290.

Meeuwig, D. 2006. Mineral and Energy-Resource Potential for White Pine County, Nevada. Nevada Bureau of Mines and Geology Open-File Report 06-5.

Midway Gold US Inc. (Midway). 2011a. Figure 1. 2011 Deep Drill Holes. July 27.

Midway. 2011b. 2011 Gold Rock Project Exploration Plan of Operations. Case File No. NVN-090376. November 22, revised June 2012.

Midway. 2013a. Gold Rock Mine Plan of Operations and Reclamation Permit Application BLM File Serial Number NVN-([To Be Assigned Upon Issuance of Permit]) Reclamation Permit Number 0326. Submitted to United States Department of Interior Bureau of Land Management Ely Field Office and Nevada Division of Environmental Protection Bureau of Mining Regulation and Reclamation. February 2013.

Midway. 2013b. Application for Permit to Appropriate the Public Waters of the State of Nevada. April 4, 2013.

Midway. 2014. Proposed Action GIS data package. Attachment to e-mail dated 4-25-2014. GIS information provided May 2014

Midway. 2015a. Internal memorandum. Report of Site Visit to Big Bull Spring Area and Green Springs Area 3/18/15.

Midway. 2015b. Gold Rock Mine Project borehole spatial data. May.

Miller, R.F. and R.J. Tausch. 2001. The role of fire in juniper and pinyon woodlands: A descriptive analysis. In: Proceedings of the First National Congress on Fire, Ecology, Prevention, and Management. Tall Timbers Research Station, Tallahassee, FL: 15-30.

Miller, R.F. T.J. Svejcar, J.A. Rose. 2000. Impacts of western juniper on plant community composition and structure. Journal of Range Management 53:574-585.

Montana Sage Grouse Working Group (MSGWG). 2005. Management Plan and Conservation Strategies for Sage Grouse in Montana – Final. Montana Sage Grouse Working Group, Montana. 200 pp.

Mote, P., A. Hamlet, M. Clark, and D. Lettenmaier. 2005. Declining Mountain Snowpack in Western North America. American Meteorological Society. January 2005. 44 pp.

Muntean, J. and D.A. Davis. 2014. Nevada Active Mines and Energy Producers: Nevada Bureau of Mines and Geology Open-File Report 14-1, scale 1:1,000,000. 1 pg.

Murphey, P.C. and J. DeBusk. 2011. Paleontological Resources Mitigation Monitoring Plan: On Line Transmission Project; Nevada. Prepared for the Bureau of Land Management. Prepared by SWCA Consultants. March 2011. 37 pp.

MWH. 2005. Final Completion Report, Golden Butte and Easy Junior Mine Sites, section 3.0 Easy Junior Mine Site December 2005.

National Audubon Society (NAS). 2015. The Climate Report. National Audubon Society, Inc., New York. [Online]. Available at: http://climate.audubon.org/. Accessed May 15, 2015.

National Earthquake Information Center (NEIC). 2014. Earthquake Archive Search and URL Builder. [Web page]. Located at http://earthquake.usgs.gov/earthquakes/search/. Accessed May 15, 2014.

National Fish, Wildlife and Plants Climate Adaptation Partnership (NFWPCAP). 2012. National Fish, Wildlife and Plants Climate Adaptation Strategy. Association of Fish and Wildlife Agencies, Council on Environmental Quality, Great Lakes Indian Fish and Wildlife Commission, National Oceanic and Atmospheric Administration, and U.S. Fish and Wildlife Service. Washington, D.C. 120 pp.

National Park Service (NPS). 2002. Air Quality in the National Parks, Second Edition. D-2266. Air Resources Division. Lakewood, CO. September. 70 pp.

NPS. 2013. National Park Service, Great Basin Nation Park, Air Quality [Web page]. Located at http://www.nps.gov/grba/naturescience/airquality.htm. Accessed: November 14, 2013.

National Technical Team (NTT). 2011. A Report on National Greater Sage-Grouse Conservation Measures. December 21.

Natural Resources Conservation Service (NRCS). 1998. Soil Survey of Western White Pine County Area, Nevada, Parts of White Pine and Eureka Counties. United States Department of Agriculture Natural Resources Conservation Service.

NRCS. 2012. Applying the Sage-Grouse Fence Collision Risk Tool to Reduce Bird Strikes. CEAP Conservation Insight Conservation Effects Assessment Project. November. 5 pp.

NRCS. 2014. Web Soil Survey. [Web page]. Located at http://websoilsurvey.nrcs.usda.gov/app/WebSoilcustomsoilresourcereportforwesternwhitepinecountyareaSurvey.aspx. Accessed: May 19, 2014. 81 pp.

NatureServe. 2014a. NatureServe Explorer. Ecological Association Comprehensive Report: Great Basin Pinyon-Juniper Woodland. [Web page]. Located at http://explorer.natureserve.org/servlet/NatureServe?searchSystemUid=ELEMENT_GLOB. Accessed: October 07, 2014.

NatureServe. 2014b. NatureServe Explorer. Ecological Association Comprehensive Report: Pinus monophylla - Juniperus osteosperma / Sparse Understory Woodland. [Web page]. Located at http://explorer.natureserve.org/servlet/NatureServe?searchCommunity Uid=ELEMENT_G. Accessed: October 07, 2014.

NatureServe. 2014c. NatureServe Explorer. Ecological Association Comprehensive Report: Juniperus osteosperma / Cercocarpus intricatus Woodland. [Web page]. Located at http://explorer.natureserve.org/servlet/NatureServe?searchCommunityUid=ELEMENT_GLOBAL.2.685440. Accessed: April 12, 2014.

NatureServe. 2014d. NatureServe Explorer. Ecological Association Comprehensive Report: Great Basin Xeric Mixed Sagebrush Shrubland. Accessed: May 20, 2014.

NatureServe. 2014e. NatureServe Explorer. Ecological Association Comprehensive Report: Inter-Mountain Basins Big Sagebrush. Accessed: May 20, 2014.

NatureServe. 2014f. NatureServe Explorer. Ecological Association Comprehensive Report: Inter-Mountain Basins Mixed Salt Desert Scrub. Accessed: May 20, 2014.

NatureServe. 2014g. NatureServe Explorer. Ecological Association Comprehensive Report: Inter-Mountain Basins Big Sagebrush Steppe. Accessed: May 20, 2014.

NatureServe. 2014h. NatureServe Explorer. Ecological Association Comprehensive Report: Inter-Mountain Basins Greasewood Flat. Accessed: May 20, 2014.

Neilson, R.P., J.M. Lenihan, D. Bachelet, and R.J. Drapek. 2005. Climate Change Implications for Sagebrush Ecosystems. Transactions of the 70th North American Wildlife and Natural Resources Conference. [Web page]. Located at https://www.researchgate.net/publication/284036055. Accessed: November 15, 2016.

Netcher, Dan. 2015. Personal communication [Apr 27 email with draft comment responses attached. RE: seep at the Easy Junior Waste Rock Disposal Area]. EIS Project Manager, BLM Ely District Office, Ely, Nevada.Neuman, Shlomo P. and Paul A. Witherspoon, 1969. Applicability of current theories of flow in leaky aquifers, Water Resources Research, vol. 5, no. 4, pages. 817-829.

Nevada Administrative Code (NAC). 2013. Nevada Administrative Code: NAC 445B.22097 Standards of quality for ambient air. (NRS 445B.210) [Web page]. Located at http://www.leg.state.nv.us/Nac/NAC-445B.html#NAC445BSec22097. Accessed: November 23, 2013.

NAC. 2017. Nevada Administrative Code: NAC 445B.22097 Standards of quality for ambient air. (NRS 445B.210) [Web page]. Located at https://www.leg.state.nv.us/NAC/NAC-445B.html#NAC445BSec22097. Accessed: July 27, 2017.

Nevada Board of Wildlife Commissioners. 2003. Policy for the Management of Pronghorn Antelope.

Nevada Bureau of Mines and Geology (NBMG). 2000. Guidelines for Evaluating Liquefaction Hazards in Nevada. [Web page]. Located at http://nbmg.unr.edu/nesc/liquefaction.htm. Accessed: October 1, 2013.

NBMG. 2001. Nevada Abandoned Mines Database Compilation Update. Mine Shafts. [Web page]. Located at http://www.epa.gov/esd/land-sci/nv_geospatial/pages/nvgeo_gis4_mine_shaft_md.htm. Accessed: August 14, 2014.

NBMG. 2011. Current Oil and Gas Well map NBMG Open-File Report 11-6. [Web page]. Located at http://www.nbmg.unr.edu/Oil&Gas/NVWellInfo.html. Accessed: October 8, 2014.

NBMG. 2012a. Recent Geothermal Activity in Nevada- Spring 2012. [Web page]. Located at http://geothermal.org/PDFs/Articles/12MayJune29.pdf. Accessed: 10 October, 2014.

NBMG. 2012b. The Nevada Mineral Industry – 2012. NBMG Special Publication MI-2012. [Web page]. Located at http://www.nbmg.unr.edu/Pubs/mi/mi2012/mi2012.pdf. Accessed: October 8, 2014.

NBMG. 2014. Current Geothermal Projects/Exploration Activity. [Web page]. Located at http://www.nbmg.unr.edu/Geothermal/Exploration.html. Accessed: October 8, 2014.

Nevada Bureaus of Air Pollution Control & Air Quality Planning. 2014. Implementation of Air Quality Standards. Department of Conservation and Natural Resources. Division of Environmental Protection. December 2014.

Nevada Commission on Tourism. 2013. Online interactive website and downloadable Visitor's guide –Places to Stay. [Web page]. Located at http://travelnevada.com/places-to-stay/ and http://travelnevada.com/subscribe/visitors-guide/. As cited in Blankenship Consulting LLLC 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions. Accessed: multiple occasions 2012 and 2013.

Nevada Department of Education 2006 through 2013. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

Nevada Department of Education. 2012. Enrollment by School. [Web page]. Located at http://www.doe.nv.gov/Resources/Resources_Updated/. Accessed: November 13, 2013.

Nevada Department of Employment, Training, and Rehabilitation. 2013. Nevada's Largest Employers 1st Quarter 2013. [Web page]. Located at http://www.nevadaworkforce.com/?PAGEID=67&SUBID=169. Accessed: November 22, 2013.

Nevada Department of Health and Human Services (NDHHS). 2013. Nevada Department of Health and Human Services. [Web page]. Located at http://dhhs.nv.gov/default.htm. Accessed: October 7, 2013. As cited in Blankenship Consulting LLLC and Sammons/Dutton LLC. Gold Rock Project Baseline Socioeconomic and Environmental Justice Conditions. October 21, 2013.

NDHHS Nevada Division of Public and Behavioral Health (NDPBH). 2013. Ely Mental Health Center. [Web page]. Located at http://mhds.nv.gov/index.php?option=com_content &task=view&id=83&Itemid=45. Accessed: November 12, 2013.

Nevada Division of Minerals (NDOM). 2006. Nevada Abandoned Mine Lands Report 2005. Carson City, NV: Commission on Mineral Resources, dated April 2006. [Web page]. Located at http://minerals.state.nv.us/forms/aml/AML%20Report/amlreport2005.pdf. Accessed: January 10, 2013.

NDOM. 2014. Nevada Oil Patch. January/February 2014. [Web page]. Located at http://minerals.nv.gov/Programs/OG/OGForms/OilPatch20140112all.pdf. Accessed: September 25, 2017.6 pp.

Nevada Department of Safety. 2013. Nevada Department of Safety – Nevada Highway Patrol (NHP), Northern Command East Substations. [Web page]. Located at http://nhp.nv.gov/Contact/NCE/. Accessed: November 22, 2013.

Nevada Department of Taxation. 2009. Combined Sales & Use Statistical Report. [Web page]. Located at http://tax.state.nv.us/documents/June_09_stat.pdf. Accessed: November 21, 2013.

Nevada Department of Taxation. 2010. Combined Sales & Use Statistical Report. [Web page]. Located at http://tax.state.nv.us/documents/SUT_Stat_June_10.pdf. Accessed: November 21, 2013.

Nevada Department of Taxation. 2011. Combined Sales & Use Statistical Report. [Web page]. Located at http://tax.state.nv.us/documents/SUT_Stat_June_11.pdf. Accessed: November 21, 2013.

Nevada Department of Taxation. 2012. Combined Sales & Use Statistical Report. [Web page]. Located at http://tax.state.nv.us/documents/SUT_Stat_June_12.pdf. Accessed: November 21, 2013.

Nevada Department of Taxation. 2013a. Nevada Department of Taxation, Division of Local Government Services: Local Government Finance Section Proforma Ad Valorem Revenue Projections, Fiscal Year 2013-2014, March 25, 2013. . [Web page]. Located at http://tax.state.nv.us/documents/DOAS/Local%20Government%20New%20Proposed%20Pg/FY%202013-14%20Proforma%20Ad%20Valorem%20Revenue%20Projections.pdf. Accessed: November 22, 2013.

Nevada Department of Taxation. 2013b. Nevada Department of Taxation, Division of Local Government Services - 2011-2012 Statistical Analysis of the Roll. Located at https://tax.nv.gov/LocalGovt/LocalGovt_Finance/Local_Government_Finance/LA_SAR_11-12.pdf . Accessed on September 25, 2017.

Nevada Department of Taxation. 2013c. Nevada Department of Taxation Annual Report, Fiscal Year 2011-2012. [Web page]. Located at https://tax.nv.gov/LocalGovt/LocalGovt _Finance/Local_Government_Finance/ AnnualReport_FY12_final. Accessed: September 25, 2017.

Nevada Department of Taxation. 2013d. Combined Sales & Use Statistical Report. [Web page]. Located at http://tax.state.nv.us/documents/SUT_Stat_June_13.pdf. Accessed: November 22, 2013.

Nevada Department of Transportation. (NDOT). 2013a. 2012 Annual Average Daily Traffic Counts for White Pine and Eureka Counties. [Web page]. Located at http://apps.nevadadot.com/trina/. Accessed: November 15, 2013.

NDOT. 2013b. Fatal Crashes and Fatalities by County, Person Type, Day, Month, Year, and Percent Change. [Web page]. Located at http://ots.state.nv.us/FARS_OTS/ 2013/NevadaWeeklyFARSUpdate.pdf. Accessed: November 15, 2013.

NDOT. 2014. Personal communication [Mar 10 email to K. Portue, ARCADIS, Phoenix, Arizona. RE: Wildlife Crash Data US 50 MP 1 to 31, White Pine County]. Nevada Department of Transportation. Carson City, Nevada.

Nevada Department of Wildlife (NDOW). 2006. Management Plan for Mule Deer. [Web page]. Located at http://www.ndow.org/uploadedFiles/ndoworg/Content/public _documents/Law/MuleDeerManagementPlans.pdf. Accessed: November 7, 2014.

NDOW. 2007. Mule Deer Herd Prescription for Management Area 10. March.

NDOW. 2009. Nevada Sage-grouse Conservation Project. W-64-R-9. Nevada Department of Wildlife, Reno, Nevada. 36 pp.

NDOW. 2010. Nevada Sage-grouse Conservation Project. W-64-R-10 Federal Aid Grant. Nevada Department of Wildlife, Reno, Nevada. 38 pp.

NDOW. 2011. Nevada Sage-grouse Conservation Project. Final Performance Report. FBMS Grant No: F10AF00677. Nevada Department of Wildlife, Reno, Nevada. 35 pp.

NDOW. 2012a. Nevada Sage-grouse Conservation Project. Interim Performance Report. FBMS Grant No: F10AF00677. Nevada Department of Wildlife, Reno, Nevada. 37 pp.

NDOW. 2012b. Wildlife Action Plan. Developed by the Wildlife Action Plan Team. September 6.

NDOW. 2013a. 2012-2013 Big Game Status. Nevada Department of Wildlife, Reno, Nevada. 213 pp.

NDOW. 2013b. Personal communication [Oct 31 letter to A. Haraminac, ARCADIS, Lakewood, Colorado. RE: Gold Rock Mine]. Conservation Aide III, Nevada Department of Wildlife, Reno, Nevada. 8 pp.

NDOW. 2013c. Upland and Migratory Game Bird, Rabbit Furbearing Mammals Harvest Data and Population Status Reports. NDOW, Reno, Nevada. 110 pp.

NDOW. 2013d. Nevada Sage-grouse Conservation Project. Interim Performance Report. FBMS Grant No: F11AF00994. Nevada Department of Wildlife, Reno, Nevada. December. 37 pp.

NDOW. 2014a. Personal communication [Jun 4 letter to A. Haraminac, ARCADIS, Lakewood, Colorado. RE: Gold Rock Mine]. Nevada Department of Wildlife, Reno, Nevada. 14 pp.

NDOW. 2014b. Nevada Sage-grouse Conservation Project. Interim Performance Report. FBMS Grant No: F13AF00421. Nevada Department of Wildlife, Reno, Nevada. December. 39 pp.

NDOW. 2015a. Governor's 2016-2017 Budget Overview Presentation. Legislative Commission's Budget Subcommittee, January 28, 2015. 43 pp.

NDOW. 2015b. 2014-2015 Big Game Status. NDOW, Reno, Nevada. 226 pp.

NDOW. 2015c. Nevada Sage-grouse Conservation Project. Interim Performance Report. FBMS Grant No: F13AF00421. Nevada Department of Wildlife, Reno, Nevada. September. 35 pp.

NDOW. 2016a. Greater Sage-Grouse seasonal use mapping modified by Egan Field Office biologists based on Geographic Information System spatial data layers in <Coates, P.S., Casazza, M.L., Brussee B.E., Ricca, M.A., Gustafson, K.B., Sanchez-Chopitea, E., Mauch, K., Niell, L., Gardner, S., Espinosa, S., and Delehanty, D.J., 2016, Spatially explicit modeling of annual and seasonal habitat for greater sage-grouse (*Centrocercus urophasianus*) in Nevada and Northeastern California—an updated decision-support tool for management: U.S. Geological Survey data release. February. [Web page]. Located at http://dx.doi.org/10.5066/F7CC0XRV).> June 20.

NDOW. 2016b. Personal communication [Jun 22 letter to R. Johl, Arcadis, Phoenix, Arizona. RE: Gold Rock Mine]. Nevada Department of Wildlife, Reno, Nevada. June 22. 14 pp.

NDOW. 2017a. Personal communication [August 30 e-mail from K. Menghini to E. Duvall, Arcadis, Phoenix, Arizona. RE: Sage grouse data for Gold Rock]. Nevada Department of Wildlife, Ely, Nevada. August 30. 4 pages,

NDOW. 2017b. Personal communication [September 7 e-mail from M. Kolada to E. Duvall, Arcadis, Phoenix, Arizona. RE: Sage Grouse Info for CESA]. Nevada Department of Wildlife, Ely, Nevada. August 30. 2 pages,

Nevada Division of Environmental Protection (NDEP). 1994. Summary of WPCP Compliance Inspections 2-16-94, Alta Gold Co. Easy Junior Mine Water Pollution Control Permit #NEV89051 and Taylor Mine WPCP #NEV90002. March 14, 1994.

NDEP. 1998a. WPCP #NEV89051, Easy Junior Land Application Request dated January 26, 1998. February 13, 1998.

NDEP. 1998b. 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. September 3.

NDEP. 2012. Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990-2030. [Web page]. Located at: https://ndep.nv.gov/docs_13/ghg_report_2012.pdf. Accessed: October 10, 2016. 79 pp.

NDEP. 2013a. Nevada 2008-10 Water Quality Integrated Report with EPA Overlisting. Bureau of Water Quality Planning. May. 219 pp.

NDEP. 2013b. Nevada Air Quality Trend Report, 2000-2010. [Web page]. Located at http://ndep.nv.gov/baqp/monitoring/docs/trend.pdf. Accessed: November 25, 2013.

NDEP. 2013c. Draft Nevada 2012 Water Quality Integrated Report. Assessment period: October 1, 2006 through September 30, 2011. Bureau of Water Quality Planning. April.

NDEP. 2013d. Planning and Modeling Branch - Increment Tracking. Bureau of Air Quality Planning. [Web page]. Located at http://ndep.nv.gov/baqp/planmodeling/increment.html. Accessed: November 25, 2013.

NDEP. 2013e. Solid Waste Permitted Facility Summary for multiple Nevada counties. November 25. 26 pp.

NDEP. 2013f. Notice of Final Decision for Reclamation Permit 0343, Wheeler Ridge Exploration Project, Mt. Hamilton, LLC. July 22.

Nevada Division of State Lands Sagebrush Ecosystem Program (SEP). 2014. 2014 Nevada Greater Sage-grouse Conservation Plan Draft. Sagebrush Ecosystem Program, Carson City, Nevada. August 21. 210 pp.

SEP. 2016. Nevada Habitat Quantification Tool Scientific Methods Document v1.1. Prepared by Environmental Incentives, LLC and EcoMetrix Solutions Group, LLC for the State of Nevada Department of Conservation and Natural Resources. January 25, 2016. 75 pp.

Nevada Division of Water Resources (NDWR). 1971. NDWR Water Resources Report No. 3.

NDWR. 2005. Certification of Appropriation of Water Permit No. 53389, Certificate No. 14470, Rescinded June 5, 1996, Forfeited December 20, 2005. [Web page]. Located at http://water.nv.gov/data/permit/permit.cfm?page=1&app=53389. Accessed: October 1, 2014. 4 pp.

NDWR. 2010. NDWR Designated Groundwater Basins of Nevada. September.

NDWR. 2012. Crop and Irrigation Pumpage Inventory-Newark Valley Basin 154 2012.

NDWR. 2014a. Hydrographic Area Summary, Hydrographic Area No. 173B, Railroad Valley-Northern Part. [Web page]. Located at http://water.nv.gov/data/basinsummary/. Accessed: September 30, 2014.

NDWR 2014b. Hydrographic Area Summary, Hydrographic Area No. 154, Newark Valley. [Web page]. Located at http://water.nv.gov/data/basinsummary/. Accessed: September 30, 2014.

NDWR. 2014c. Water Level Site Information 390706115341601 173B N15 E57 33CBDA1 Green Springs US Minerals.pdf. [Web page]. Located at http://water.nv.gov/data/waterlevel/site.cfm?ID=4103. Accessed: February 21, 2014.

NDWR. 2014d. Nevada Division of Well Log General Report, Basin 173B Railroad Valley/Northern Part. Well Log Database Query Tool [Web page]. Located at http://water.nv.gov/data/welllog/index.cfm?CFID=2409039&CFTOKEN=d7962bc72f479bd8-0342F291-DA12-7199-CD6AB8E38A71C85D. Accessed: March 5, 2014.

NDWR. 2014e. Nevada Division of Well Log General Report, Basin 154 Newark Valley. Well Log Database Query Tool [Web page]. Located at http://water.nv.gov/data/welllog/index.cfm?CFID=2409039&CFTOKEN=d7962bc72f479bd8-0342F291-DA12-7199-CD6AB8E38A71C85D. Accessed: February 22, 2014.

NDWR. 2014f NDWR Spring and Stream Flow Data. [Web page]. Located http://water.nv.gov/data/streamflow/. Accessed: February 21, 2014.

NDWR. 2014g. NDWR Water Rights Database, Hydrographic Abstract Advanced Search, Basin 173B Railroad Valley/Northern Part. [Web page]. Located at http://water.nv.gov/data/hydrographic/. Accessed: June 11, 2014.

NDWR. 2015a. NDWR Water Rights Database, Hydrographic Abstract Advanced Search, Basin 173B Railroad Valley/Northern Part. [Web page]. Located at http://water.nv.gov/data/hydrographic/. Accessed: May 12, 2015. (pg 1-2)

NDWR. 2015b. Letter to Midway Gold US Inc. re: Midway Gold Us Inc.'s groundwater permits 80842 and 82691 in the Railroad Valley-North Basin (#173B). Dated May 27. 1 pg.

NDWR. 2015c. Permit 80842 To Appropriate Water. Dated May 27. [Web page]. Located at http://water.nv.gov. Accessed: June 9, 2016. 5 pp.

NDWR. 2015d. Permit 82691 To Appropriate Water. Dated May 27. [Web page]. Located at http://water.nv.gov. Accessed: June 9, 2016. 5 pp.

NDWR. 2017. Hydrographic Area Summary for the Railroad Valley/Northern Part. [Web page]. Located at http://water.nv.gov/UndergroundActive.aspx. Accessed: August 24, 2017. 1 pg.

Nevada Governor's Sage-grouse Conservation Team (NGSGCT). 2010. Nevada Energy and Infrastructure Development Standards To Conserve Greater Sage-grouse Populations and Their Habitats. April 2010.

Nevada Health Centers. 2013. Eureka Medical Center. [Web page]. Located at http://nevadahealthcenters.org/locations/rural-nevada/eureka-medical-clinic/. Accessed: December 18, 2013.

Nevada Natural Heritage Program (NNHP). 2013. Data request response from E. Miskow, Biologist/Data Manager, dated October 28, 2013.

NNHP. 2014a. Nevada Springs Conservation Plan. [Web page]. Located at http://heritage.nv.gov/. Accessed: April 14, 2014.

NNHP. 2014b. Species Lists. [Web page]. Located at http://heritage.nv.gov/species/lists.php. Accessed: April 12, 2014.

NNHP. 2014c. Species Information Results. Department of Conservation and Natural Resources, Nevada Natural Heritage Program. [Web page]. Located at http://heritage.nv.gov/species/process.php. Accessed: October 2, 2014.

Nevada Rural Housing Authority. 2005. Nevada Rural Housing Needs Assessment. [Web page]. Located at http://www.nvrural.org/sites/default/files/Housing%20Needs%20Report%203_2.pdf. Accessed: November 25, 2013.

Nichols, William D. 2000. Regional Ground-Water Evapotranspiration and ground-Water Budgets, Great Basin, Nevada. USGS Professional Paper 1628.

Nolan, T.B., Merriam, C.W. and J.S. Williams. 1956. The Stratigraphic Section in the Vicinity of Eureka, Nevada. United States Geological Survey Professional Paper 276. 77 pp.

Nonne, D., E Blomberg, and J. Sedinger. 2013. Dynamics of Greater Sage-Grouse (*Centrocercus urophaisanus*) populations in response to transmission lines in central Nevada. Progress Report: Year 10. February 2013. Department of Natural Resources and Environmental Sciences, University of Nevada, Reno. 75 pp.

O'Farrell. 1980. Spatial relationships of rodents in a sagebrush community. Journal of Mammalogy 61(4): 589-605.

Oram, Millie. 2007. Eureka County Social and Senior Services. Personal communication with G. Blankenship, Blankenship Consulting LLC. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

Ortega, C.P. 2012. Effects of noise pollution on birds: A brief review of our knowledge. Ornithological Monographs 2012(74):6-22.

Pagel, J.E., D.M. Whittington, and G.T. Allen. 2010. Interim golden eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Bird Management, U.S. Fish and Wildlife Service

Parris, K. M., and A. Schneider 2008. Impacts of traffic noise and traffic volume on birds of roadside habitats. Ecology and Society 14(1): 29.

Patricelli, G.L., J.L. Blickley, and S.L. Hooper. 2013. Recommended management strategies to limit anthropogenic noise impacts on Greater Sage-Grouse in Wyoming. Human-Wildlife Interactions 7(2): 230-249.

Patricelli, G.L., J.L. Blickley, and S.L. Hooper. undated. The impacts of noise on greater sage-grouse: A discussion of current management strategies in Wyoming with recommendations for further research and interim protections. Prepared for: The Bureau of Land Management, Lander Field Office and Wyoming State Office, Cheyenne and Wyoming Game and Fish Department. [Web page]. Located at https://eplanning.blm.gov/epl-front-office/projects/lup/36511/45862/49563/WildEarth%20Guardians/Attachment%2013%20Patricelli,%20et%20al.,__%20Revised%20noise%20recommendations,%202012.pdf. Accessed: October 12, 2016.

Patsch O., D. Giambastiani, and C.R. Cole. 2012. A Class III Cultural Resources Inventory of 5,528 Acres for the Gold Rock Exploration Project, White Pine County, Nevada. BLM CRIR No. 4-1957; NVCRIS No. 18420. ASM Affiliates, Inc., Reno, NV. Prepared for BLM Ely District, Ely, NV. 125 pp. plus appendices. [CONFIDENTIAL]

Patsch, Oliver, Shannon Mahoney, and Dayna Giambastiani. 2013. A Class III Cultural Resources Inventory of 1,173 Acres for Midway Gold's Meridian Ridge Project, Pancake Range, White Pine County, Nevada. BLM CRIR No. 4-2051; NVCRIS No. 18420-05. ASM Affiliates, Inc., Reno, NV. Prepared for BLM Egan Field Office, Ely, NV. 89 pp. plusappendices. [CONFIDENTIAL]

Payne, C., R. Schur, R. Rick, and D. Merritt. 2014. Midway Gold 2013 Gold Rock project mapping. May 2014. GIS files.

Peacock, Russ. 2013. White Pine County Emergency Management Coordinator. Personal communication with G. Blankenship, Blankenship Consulting LLC. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

Peterson, M.D., Frankel, A.D., Harmesen, S.C., Mueller, C.S., Haller, M., Wheeler, R.L., Wesson, R.L., Zeng, Y, Boyd, O.S., Perkins, D.M., Luco, N., Field, E.H., Willis, C.J., and K.S. Rukstales. 2008. Documentation for the 2008 Update of the United States National Seismic Hazard Maps. USGS Open File Report 2008-1128. 128 pp.

Price, William. 2009. Prediction Manual for Drainage Chemistry from Sulphidic Geological Materials, CANMET Mining and Mineral Sciences Laboratories. Work Performed for MEND Program (Mine Environment Neutral Drainage Program). MEND Report. 1.20.1. 579 pp.

Provencher, L., and T. Anderson. 2011. Climate Change Revisions to Nevada's Wildlife Action Plan: Vegetation Mapping and Modeling. Report to the Nevada Department of Wildlife.

Ratke, A. 2014. Personal communication [May 20 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: GR Table 2.3-1 Disturbance Polygon.pdf]. Senior GIS Specialist, Midway Gold, Englewood, Colorado. 1 pg.

Redsteer, M.Hisa (compiler). 2000. Fault number 1215, Unnamed fault zone. In Quaternary fault and fold database of the United States. United States Geological Survey. [Web page]. Located at http://earthquakes.usgs.gov/hazards/qfaults. Accessed: November 13, 2013.

Rehfeldt, Gerald, N. Crookston, M. Warwell, and J. Evans. 2006. Empirical Analyses of Plant-Climate Relationships for the Western United States. International Journal of Plant Science. 167(6):1123–1150.

Reijnen and Foppen. 2006. Impact of Road Traffic on Breeding Bird Populations. In J. Davenport and J.L. Davenport, eds, The Ecology of Transportation: Managing Mobility for the Environment, pp. 255-274. Springer-Verlag, Heidelberg.

Reijnen, R. and R. Foppen 1994. The effects of car traffic on breeding bird populations in woodland. Breeding dispersal of male willow warblers (Phylloscopus trochilus) in relation to the proximity of a highway. Journal of Applied Ecology 31: 95-101.

Resource Concepts, Inc. 2001. Nevada Grazing Statistics Report and Economic Analysis for Federal Lands in Nevada. March 26. 108 pp.

Sage-Grouse Conservation Team. 2004. Greater Sage-Grouse Conservation Plan for Nevada and Eastern California. 118 pp.

Sanchez, V. 2012. Duckwater Shoshone Tribal Chairman. Personal communication with Jan Elise Stambro, Senior Research Economist for the Bureau of Economic and Business Research, University of Utah on December 18 and 20, 2012. As cited in Bureau of Land Management. 2013. Pan Mine Project Final Environmental Impact Statement. Ely District Office/Egan Field Office. Case File NVN-090444.

Santer, C. Mears, C. Doutriaux, P. Caldwell, P. J. Gleckler, T. M. L. Wigley, S. Solomon, N. P. Gillett, D. Ivanova, T. R. Karl, J. R. Lanzante, G. A. Meehl, P. A. Stott, K. E. Taylor, P. W. Thorne, M. F. Wehner, and F. J. Wentz. 2011. Separating signal and noise in atmospheric temperature changes: The importance of timescale. Journal of Geophysical Research, Vol. 116, D22105, doi.10.1029/2011JD016263, 2011. November. 19 pp.

Sauer, J.R., J.E. Hines, J.E. Fallon, K.L. Pardieck, D.J. Ziolkowski, Jr., and W.A. Link. 2012. The North American Breeding Bird Survey, Results and Analysis 1966 - 2011. Version 07.03.2013. USGS Patuxent Wildlife Research Center, Laurel, Maryland. [Web page]. Located at http://www.mbr-pwrc.usgs.gov/bbs/bbs.html. Accessed: November 7, 2013.

Savard, C.S. and E.J. Crompton. 1993. Hydrologic Data for East-Central Nevada, Water Years 1982 – 88. USGS Open-File Report 90-153.

Schroeder, Michael A. 2010. Greater Sage-grouse and Power Lines: Reasons for Concern. Report, Washington Department of Fish and Wildlife, Olympia, Washington. January 12, 2010.

Schroeder, J., S. Nakagawa, I.R. Cleasby, and T. Burke. 2012. Passerine birds breeding under chronic noise experience reduced fitness. PLoS ONE 7(6): e39200.

Scott, J.H. and E.D. Reinhart. 2001. Assessing Crown Fire Potential by Linking Models of Surface and Crown Fire Behavior. USFS Rocky Mountain Research Station. Research Paper RMRS-RP-29. September. 66 pp.

Sherrill, Kirk R., C.P. Melcher, and N.B. Carr. 2015. Section IV. Assessments of Species and Species Assemblages, Chapter 28. Mule Deer. [Web page]. Located at https://pubs.er.usgs.gov/publication/ofr20151155. Accessed: November 3, 2016. 35 pp.

Sherve, J. 2014. Personal communication [Jul 17 telephone conversation with E. Duvall, ARCADIS, Phoenix, Arizona. RE: status of the Ruby Hill Mine]. Ruby Hill Mine Project Manager, BLM-Mt Lewis FO, Battle Mountain, Nevada. 1 pg.

Shevenell, Lisa. 1996. Statewide Potential Evapotranspiration Maps For Nevada. University of Nevada, Reno. Mackay School of Mines Nevada Bureau of Mines and Geology Report 48. 32 pp.

Sierra Environmental Monitoring. 2002. Personal communication [Dec 22 fax from Kevin Ryan, CDM to Lynn Bjorklund-BLM, Deb Knobler, Kim Mulhern including attachment. RE: Laboratory Analysis Report, EJ LP-EFF collected 11/22/2002, received 11/22/2002, analyzed 12/2/2002. 4 pp.

Smith, Jane Kapler, ed. 2000. Wildland fire in ecosystems: effects of fire on fauna. Gen. Tech. Rep. RMRS-GTR-42-vol. 1. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 83 pp.

Snell, R. 2014a. Personal communication [Feb 4 e-mail to E. Duvall, ARCADIS, Phoenix, Arizona. RE: Area of Surface Disturbance To Date Under the Approved Exploration Plan of Operations]. Associate Director of Environmental Affairs, project coordination, Midway, Englewood, Colorado. 2 pp

Snell, R. 2014b. Personal communication [Feb 6 e-mail to E. Duvall, ARCADIS, Phoenix, Arizona. RE: Woody Debris, Plan of Operations]. Associate Director of Environmental Affairs, project coordination, Midway, Englewood, Colorado. 1 pg.

Snell, R. 2014c. Personal communication [May 20 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: Road Use Plan]. Associate Director of Environmental Affairs, project coordination, Midway, Englewood, Colorado. 3 pp.

Southern Nevada Water Authority (SNWA). 2014. Letter to Jason King, Nevada Department of Conservation and Natural Resources re: Midway Gold Us Inc.'s groundwater applications in the Railroad Valley-North Basin (#173B). Dated June 19. 1 pg.

Spiegel, Jessica. 2014. Personal communication [Jul 22 email to Penny Hunter, ARCADIS, Lakewood, Colorado. RE: activity for Ruby Hill is reactivation of operations following a highwall failure]. Barrick, Nevada. 1 pg.

SRK Consulting (SRK). 2013. Petroleum-Contaminated Soil Management Plan for the Gold Rock Mine Project. February 2013.

State of Nevada. 2012. Executive Order 2012-19 Establishing the Sagebrush Ecosystem Council. 3 pp.

Stebleton, A. and S. Bunting. 2009. Guide for Quantifying Fuels in the Sagebrush Steppe and Juniper Woodlands of the Great Basin, Technical Note 430. BLM/ID/PT-09/002+2824. 81 pp.

Steel, L., J. Agee, J. Williams, B. Brigida, M. Slosser, C. Johansson, M. Edmonds, R. Sherwin, and M. Herder. 2011. Employing nightly exit survey counts to determine the size and environmental response of Mexican free-tail bats in White Pine County, Nevada. 2011 Western Bat Working Group Biennial Meeting and Bats and Wind Energy Workshop, Las Vegas, Nevada.

Stevens, B.S., K.P. Reese, J.W. Connelly, D.D. Musil. 2012. Greater Sage-Grouse and Fences: Does Marking Reduce Collisions? Wildlife Society Bulletin DOI: 10.1002/wsb.142.

Stewart, I., D. Cayan, and M. Dettinger. 2004. Changes towards earlier streamflow timing across western North America. Journal of Climate. September. 49 pp.

Stewart, J.H. 1962. Variable Facies of the Chainman and Diamond Peak Formation in Western White Pine County, Nevada. Article 79. Short Papers in Geology and Hydrology, Articles 60-119. United States Geological Survey Professional Paper 450-C. Pages C57-C60.

Stiver, S.J., E.T. Rinkes, and D.E. Naugle. 2010. Sage-grouse Habitat Assessment Framework. U.S. Bureau of Land Management. Unpublished Report. U.S. Bureau of Land Management, Idaho State Office, Boise, Idaho. 135 pp.

Sullivan, Mike. 2013. Eureka County Emergency Medical Services Coordinator. Personal communication with G. Blankenship, Blankenship Consulting LLC. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

Swaddle J.P. and L.C. Page. 2007. High levels of environmental noise erode pair preferences in zebra finches: implications for noise pollution. Anim Behav 74:363–368.

SWCA Environmental Consultants (SWCA). 2012. Midway Gold Rock Project, Noise Assessment Addendum. Prepared for U.S. Department of the Interior Bureau of Land Management, Ely, Nevada, and Midway Gold U.S., Inc., Englewood, Colorado by SWCA Environmental Consultants, Salt Lake City, Utah. 16 pp.

SWCA. 2014. Pan Mitigation 2014 Noise Monitoring Year-End Report. June 2014. 56 pp.

SWCA. 2016. Midway Gold Pan Mine Project 2015 Noise Monitoring Year-End Report – Revised, V2. Prepared for Midway Gold US Inc. and Submitted to Bureau of Land Management Egan Field Office, Ely District Office. February 2. 63 pp.

Swetich, J. 2013. Personal Communication with J. Swetich, Detective, White Pine County Sheriff's Office. Personal communication with G. Blankenship, Blankenship Consulting LLC. September 25, 2013. As cited in Blankenship Consulting LLLC and Sammons/Dutton LLC. Gold Rock Project Baseline Socioeconomic and Environmental Justice Conditions. October 21, 2013.

Swisher, Garrett. 2013. Personal communication [Nov 19 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: Bull Corner Poison Patch Use Area Gold Rock Mine]. Rangeland Management Specialist, BLM, Ely, Nevada 2 pp.

Swisher, Garrett. 2014. Personal communication [Ap 14 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: soils, vegetation, and range resources]. Rangeland Management Specialist, BLM, Ely, Nevada. 2 pp.

Taylor, D.A.R. 2007. Water for Wildlife: Helping Western Bats Find a Place to Drink. Bat Conservation International. BATS. Volume 25, No. 1: 11-13.

Tetuan Resources. 2014. State of Nevada Commission on Mineral Resources Division of Minerals Oil and Gas Well Completion Report, Tetuan Resources Corp. Mariagnes Well. June 13, 2014. 2 pp.

The Ely Times. 2013. Group Aims to Tackle Housing Issues. [Web page]. Located at http://www.elynews.com/2013/09/13/group-aims-to-tackle-housing-issues/. Accessed: September 13, 2013.

The Ely Times. 2014. Completed Power Line Dedicated. [Web page]. Located at http://www.elynews.com/2014/01/31/completed-power-line-dedicated/. Accessed: May 15, 2014

Therrell, L., D. Cole, V. Claassen, C. Ryan, and M.A. Davies. 2006. Wilderness and Backcountry Site Restoration Guide. USDA Forest Service Technology and Development Program. Missoula, MT. Document 0623-2815-MTDC.

Trombulak, S.C. and C.A. Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. Conservation Biology 14(1): 18-30.

Trujillo, S. 2014. Personal communication [October 9 telephone conversation with E. Duvall, ARCADIS, Phoenix, Arizona. RE: RS 2477, MHLLC Centennial Seligman Road ROW, and 3809 Regulations and ROWs]. BLM Egan Field Office Realty Specialist, Ely, Nevada, 2 pp.

Tucker, A. 2017. Personal communication [Jan 20 and 23 telephone conversations with E. Duvall, ARCADIS, Phoenix, Arizona. RE: recommended background air quality concentrations]. Nevada Division of Environmental Protection's Bureau of Air Quality Protection Environmental Scientist, Carson City, Nevada. 2 pp.

U.S. Bureau of Economic Analysis (BEA). 2012. Local Areas Personal Income and Employment – Series CA25N, Total full-time and part-time employment by industry. [Web page]. Located at http://www.bea.gov/iTable/iTable.cfm?ReqID=70&step=1&isuri=1&acrdn=5. Accessed: November 22, 2013.

BEA. 2013. Local Areas Personal Income and Employment – Series CA04, Personal income summary. [Web page]. Located at http://www.bea.gov/iTable/iTable.cfm?ReqID=70&step=1&isuri=1&acrdn=5#reqid=70&step=30&isuri=1&7028=-1&7040=-1&7083=levels&7031=32000&7022=49&7023=7&7024=non-industry&7025=4&7026=32000,32011,32033&7027=2012&7001=749&7029=49&7090=70&7033=-1. Accessed: November 22, 2013 and July 13, 2016.

U.S. Bureau of Labor Statistics (BLS). 2013. Local Area Unemployment Statistics. [Web page]. Located at http://data.bls.gov/pdq/querytool.jsp?survey=la. Accessed: November 22, 2013. 7pp.

U.S. Bureau of Land Management (BLM). 1984. BLM Manual 8400 – Visual Resources Management. [Web page]. Located at http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.34032.File.dat/8400.pdf. Accessed: April 5, 2014.

BLM. 1986a. Visual Resource Inventory. (Manual H-8410-1). January 17, 1986.

BLM. 1986b. Visual Resource Management Policy Restatement, dated September 8, 1998. Information Memorandum No. 98-164.

BLM. 1989. Fencing. BLM Manual Handbook H-1741-1. Washington, D.C.

BLM. 1990. Cumulative Impact Analysis (Instruction Memorandum No. NV-90-435). BLM, Nevada State Office. September 27, 1990.

BLM. 1991. BLM Nevada Cyanide Management Plan. Nevada State Office. August 22, 1991. 62 pp.

BLM. 2000a. A Framework to Assist in Making Sensitive Species Habitat Assessments for BLM-Administered Public Lands in Idaho. Sage Grouse (Centrocercus urophasianus). BLM, Idaho State Office, Boise, Idaho. May. 50 pp.

BLM. 2000b. Management Guidelines for Sage Grouse and Sagebrush Ecosystems in Nevada" (2000). All U.S. Government Documents (Utah Regional Depository). Paper 450. October. [Web page]. Located at http://digitalcommons.usu.edu/govdocs/450. Accessed: July 7, 2013. 22 pp.

BLM. 2000c. Ely District Managed Natural and Prescribed Fire Plans, Ely, Nevada. BLM, Ely District Office. November 17, 2000.

BLM. 2001. Falcon to Gonder 345kV Transmission Project Final Environmental Impact Statement and Proposed Resource Management Plan Amendments. (NV 063-EIS00-27). December 2001.

BLM. 2004a. Easy Junior Mine Closure Project Environmental Assessment NV–040-04-16. Case File # NVN0068442. July. 55 pp.

BLM. 2004b. Decision Record and Finding of No Significant Impact, Easy Junior Closure Project Environmental Assessment. NV-040-04-016. N068442. August 9.

BLM. 2004c. BLM National Sage-Grouse Habitat Conservation Strategy 1.4.1 Guidance for the Management of Sagebrush Plant Communities for Sage-Grouse Conservation November. [Web page]. Located at http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/fish__wildlife_and.Par.11218.File.dat/Sage-Grouse_Strategy_1_4_1.pdf. Accessed: September 15, 2014.

BLM. 2005a. H-1601-1, Land Use Planning Handbook. [Web page]. Located at http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.38665.File.dat/h1601-1.pdf. Accessed: August 14, 2014.

BLM. 2005b. Ruby Hill Mine Expansion – East Archimedes Project Supplemental Environmental Impact Statement. July.

BLM. 2007a. Northeastern Great Basin Resource Advisory Council (RAC) Standards and Guidelines For Off Highway Vehicles. March 7, 2007. [Web page]. Located at http://www.blm.gov/nv/st/en/res/resource_advisory/northeastern_great.html. Accessed: October 15, 2014.

BLM. 2007b. Northeastern Great Basin Resource Advisory Council (RAC) Standards and Guidelines For Vegetation. March 7, 2007. [Web page]. Located at http://www.blm.gov/nv/st/en/res/resource_advisory/northeastern_great.html. Accessed: October 15, 2014.

BLM. 2007c. Northeastern Great Basin Resource Advisory Council (RAC) Standards and Guidelines For Rangeland Health. July 5, 2007. [Web page]. Located at http://www.blm.gov/nv/st/en/res/resource_advisory/northeastern_great.html. Accessed: November 18, 2014.

BLM. 2007d. Instruction Memorandum No. 2008-09. Issued October 15, 2007. Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Lands. 2 attachments. Issued October 15, 2007.

BLM. 2007e. Ely Proposed Resource Management Plan and Final Environmental Impact Statement (Proposed RMP/FEIS). U.S. Department of the Interior, Bureau of Land Management. November 2007. 16 pp.

BLM. 2008a. BLM National Environmental Policy Act Handbook H-1790-1. January.

BLM. 2008b. Ely District Record of Decision and Approved Resource Management Plan. U.S. Department of the Interior, Bureau of Land Management. August. 479 pp.

BLM. 2008c. Special Status Species Management Manual for the Bureau of Land Management. Revised Manual 6840. United States Bureau of Land Management. December. 47 pp.

BLM. 2009a. Standards Determination Document April 2009. Paris Livestock (2704538) Term Grazing Permit Renewal on the Corta (10033) and South Pancake (00615) Allotments. April.

BLM. 2009b. Standards Determination Document. Pete Goicoechea (2704520), Warren Scoppettone (2700101), and Paris Livestock (2704538) Term Grazing Permit Renewals on the Newark Allotment (00608). April.

BLM. 2009c. Final Environmental Impact Statement for the Bald Mountain Mine North Operations Area Project (380910 NVL0100). August 2009.

BLM. 2009d. Standards Determination Document September 2009 Duckwater Shoshone Tribe (2704608), Duckwater Cattle Company (2704617), Paris Livestock (2704538), and Tom and Ellen Gardner (2703175) Grazing Term Permit Renewals on the Duckwater (00701) and Monte Cristo (00614) Allotments. September.

BLM. 2010. Lookout Mountain Exploration Project, Environmental Assessment . DOI-BLM-NVB010-2009-0102-EA. File No. NVN-086574. July.

BLM. 2011a. Decision Record for Wild Horse Gather Plan Environmental Assessment for the Pancake Complex. DOI-BLM-NV-L010-2011-0023-EA. [Web page]. Located at http://www.blm.gov/nv. Accessed: August 29, 2017. November 28. 141 pages.

BLM. 2011b. Greater Sage-Grouse Interim Management Policies and Procedures (IM No. 2012-043). December 22.

BLM. 2011c. BLM National Greater Sage-Grouse Land Use Planning Strategy. Instruction Memorandum No. 2012-044. December 27. [Web page]. Located at http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2012/IM_2012-044.html. Accessed: November 8, 2013.

BLM. 2012a. Telecommunications Fiber Optic Lines: Tuscarora to Lone Mountain Station & Dinner Station to Adobe Ranches. DOI-BLM-NV-E020-2011-0501-EA, 2800 (NVE0200), Serial No. NVN-089216 [Web page]. Located at http://www.blm.gov/nv/st/en/fo/elko_field_office/blm_information/nepa/telecommunications.html Accessed: January 15, 2014

BLM. 2012b. Midway Gold Rock Project Final Environmental Assessment. DOI-BLM-NV-L010-2012-0010-EA. June 2012. Ely, NV: U.S. Bureau of Land Management. [Web page]. Located at https://www.blm.gov/epl-frontoffice/projects/nepa/29604/37603/39503/Midway_Gold_Rock_Final_Environmental_Assessment.pdf. Accessed: October 25, 2012.

BLM. 2012c. Finding of No Significant Impact (FONSI) Midway Gold Rock Project. DOI-BLM-NVL010-2012-0010-EA. Signed June 12, 2012. [Web page]. Located at https://www.blm.gov/epl-frontoffice/projects/nepa/29604/37604/39504/Gold_Rock_Finding_of_No_Significant_Impact.pdf. Accessed: October 25, 2012.

BLM. 2012d. Environmental Assessment: Ruby Hill Project (DOI-BLM-NV-B010-2012-0047-EA). August 2012.

BLM. 2012e. Lands With Wilderness Characteristics Form 1, Inventory Verified For: Midway Gold Rock Amendment 2012. Compiled by Emily Simpson, Wilderness Planner. August 6. 4 pp.

BLM. 2012f. White Paper on BLM and U.S. Forest Service Preliminary Habitat Map. [Web page]. Located at http://www.blm.gov/nv/st/en/prog/wildlife/greater_Greater Sage-Grouse/preliminary_habitat.html. Accessed: August 27, 2014.

BLM. 2012g. Wild and Scenic Rivers Eligibility Study. Ely District Office. September. 27 pp.

BLM. 2012h. Mount Hope Project Final Environmental Impact Statement NV063-EIS07-019. Three volumes. File Number: NVN-082096. File Number: NVN-084632. File Number: NVN-091272. Mount Lewis Field Office. October 2012. 109 pp.

BLM. 2012i. BLM Ely District Recommended Bird Nest Buffer Sizes, dated October 12, 2012]. 5 pp.

BLM. 2012j. 2012 Gold Rock Exploration Project Amendment Preliminary Environmental Assessment. DOI-BLM-NV-L010-2012-0044-EA. October 2012. Ely, NV: U.S. Bureau of Land Management. [Web page]. Located at https://www.blm.gov/epl-front-office/projects/nepa/34252/40767/42877/2012_Gold_Rock_Exploration_Project_Amendment_Priliminary_Environmental_Assessment.pdf. Accessed: October 25, 2012.

BLM. 2012k. Decision Record/FONSI (November 15, 2012) Finding of No Significant Impact (FONSI) Midway Gold Rock Project. DOI-BLM-NVL010-2012-0044-EA. Signed November 15, 2012. https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId=34252&dctmId=0b0003e880412ae4. 14 pp.

BLM. 2013a. BLM to Begin Environmental Impact Statement for the Proposed Gibellini Mine Project (News Release No. BMDO 2013-10). April 23. [Web Page]. Located at http://www.blm.gov/nv/st/en/info/newsroom/2013/april/battle_mountain__.html. Accessed: November 5, 2014.

BLM. 2013b. Mount Wheeler Strawberry 69 kV Transmission Line ROW Product Preliminary EA. September.

BLM. 2013c. Final Environmental Impact Statement for the Pan Mine Project. U.S. Department of the Interior, Bureau of Land Management. November 2013.

BLM. 2013d. Mt. Hamilton LLC Road Use and Road Improvement Right-of-Way Project Final Environmental Assessment. DOI-BLM-NV-L010-2013-0034-EA. November 2013. 115 pp.

BLM. 2013e. Preliminary Environmental Assessment, Newark and Huntington Watersheds Implementation and Restoration Plan, DOI-BLM-NV-L010-2012-0033-EA. November.

BLM. 2013f. Pan Mine Project Record of Decision Plan of Operations Approval, and Approval of Issuance of Right-Of-Way Grant. U.S. Department of the Interior, Bureau of Land Management. December 2013.

BLM. 2014a. NEPA Project Summary, Leoman Spring 1-32. DOI-BLM-NV-L010-2013-0003-DNA. [Web page]. Located at https://www.blm.gov/epl-front-office/eplanning/projectSummary.do?methodName=renderDefaultProjectSummary&projectId=34560. Accessed: April 30, 2014.

BLM 2014b. Bureau of Land Management's Range Administration System. [Web page]. Located at http://www.blm.gov/ras/index.htm. Accessed: Multiple days in April and May.

BLM. 2014c. Bureau of Land Management's Land and Mineral Legacy Rehost 2000 System-LR2000. U.S. Department of the Interior. Mining Claims, Oil and Gas Leases, and Geothermal Leases. [Web page]. Located at http://www.blm.gov/lr2000/. Accessed: Multiple days in April, May, June and September 2014.

BLM. 2014d. Nevada BLM Programs Leasable Minerals Oil and Gas Leasing. [Web page]. Located at http://www.blm.gov/nv/st/en/prog/minerals/leasable_minerals/oil___gas/oil_and_gas_leasing.html. Accessed: Multiple days, May 2014.

BLM. 2014e. BLM Egan Field Office GIS layers pertaining to commercial firewood permits, commercial pine nut collection areas, range improvement areas, vegetation treatment areas, noxious weed inventories, and noxious weed treatments transferred by Cody Coombs via ftp on May 14, 2014.

BLM. 2014f. Bureau of Land Management – Nevada Ely District Office. Bald Mountain Mine North and South Operations Area Project. [Web page]. Located at http://www.blm.gov/nv/st/en/fo/ely_field_office/blm_programs/minerals/mining_projects/bald_mountain_mine0.html. Accessed: May 16, 2014.

BLM. 2014g. Bureau of Land Management's Geocommunicator. Oil and gas lease information. [Web page]. Located at http://www.geocommunicator.gov/GeoComm/. Accessed: June 4, 2014.

BLM. 2014h. Fact Sheet on the BLM's Management of Livestock Grazing. [Web page]. Located at http://www.blm.gov/wo/st/en/prog/grazing.html. Accessed: November 5, 2014.

BLM. 2015a. Instruction Memorandum NV-2015-017. Revised Direction for Proposed Activities within Greater Sage-grouse Habitat. February 5. 5 pp.

BLM. 2015b. Draft Environmental Impact Statement for the Gold Rock Mine Project, White Pine County, NV. BLM/NV/EL/ES/15-05+1793. February. 2 Volumes. [Web page]. Located at http://www.blm.gov/nv/st/en/fo/ely_field_office/blm_programs/minerals/mining_projects/gold_rock_project.html. Accessed: February 13, 2015. 762 pp.

BLM. 2015c. Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment. Attachment 2 From the USDI 2015 Record of Decision and Approved Resource Management Plan Amendments for the Great Basin Region including the Greater Sage-Grouse Sub-Regions of: Idaho and Southwestern Montana, Nevada and Northeastern California, Oregon, and Utah. US Department of the Interior Bureau of Land Management Nevada State Office, Reno, Nevada. September. [Web page]. Located at https://www.blm.gov/epl-front-office/eplanning/plan AndProject Site.do?methodName=dispatchToPatternPage&currentPageId=31103. Accessed: September 22, 2015.

BLM. 2017. Personal Communication [e-mail to E. Duvall, Arcadis, Phoenix, Arizona]. GIS layers pertaining to the Proposed Duckwater Reservation Expansion. March 17. 1 pg.

U.S. Bureau of Land Management (BLM) and State Historic Preservation Office (SHPO). 2012. State Protocol Agreement between the State of Nevada BLM and the Nevada State Historic Preservation Office (SHPO) for Implementing the National Historic Preservation Act. January.

BLM and SHPO. 2014. Programmatic Agreement Between the Bureau of Land Management, Egan Field Office and the Nevada State Historic Preservation Officer regarding the Midway Gold US Inc. Gold Rock Project . Signed by SHPO March 17, 2014. (BLM signed January 14, 2014).

U.S. Bureau of Land Management Nevada State Office (BLM Nevada State Office). 2008. Instruction Memorandum No. NV- 2008-032. Subject: Nevada Bureau of Land Management's Water Resource Data and Analysis Policy for Mining Activities. 2 pp. Attachments: Attachment 1. Nevada BLM's Water Resource Data and Analysis Guide for Mining Activities (16 pp); Attachment 2. Table of References (5 pp). April 15.

BLM Nevada State Office. 2010. Instruction Memorandum No. NV-2010-014. Nevada Bureau of Land Management Rock Characterization and Water Resources Analysis Guidance for Mining Activities. 2 pp. Attachment 1 - Nevada Bureau of Land Management Rock Characterization and Water Resources Analysis Guidance for Mining Activities (10 pp). January 8.

U.S. Bureau of Land Management (BLM) and U.S. Fish and Wildlife Service (USFWS). 2010. Memorandum of Understanding between the U.S. Department of the Interior Bureau of Land Management and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds. 13 pp.

BLM and USFS. 2015. Nevada and Northeastern California Greater Sage-Grouse Proposed Land Use Plan Amendment and Final Environmental Impact Statement. U.S. Department of the Interior Bureau of Land Management, Reno, Nevada and Sacramento, California, and U.S. Department of Agriculture Forest Service, Sparks, Nevada. [Web page]. Located at https://www.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=31103. Accessed: August 26, 2015.

U.S. Census Bureau. 1973. 1970 Census of Population. Volume 1 Characteristics of the Population. Part 30 Nevada. January. 71 pp.

U.S. Census Bureau. 1981. U.S. Census Bureau. 1980. Census of Population: Volume 1, Characteristics of the Population.

U.S. Census Bureau. 1992. 1990 Census of Population and Housing; Population and Housing Unit Counts, Publication CPH-2-30. [Web page]. Located at http://www.census.gov/prod/cen1990/cph2/cph-2-30.pdf. Accessed: November 25, 2013.

U.S. Census Bureau. 2003. 2000 Census of Population and Housing; Population and Housing Unit Counts, Publication PHC-3-30. [Web page]. Located at http://www.census.gov/prod/cen2000/phc-3-30.pdf. Accessed: November 25, 2013.

U.S. Census Bureau. 2011. 2010 Census. Dataset 2010 SF1 100% Data, Table DP-1: Profile of General Population and Housing Characteristics. [Web page]. Located at http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t. Accessed: November 25, 2013.

U.S. Census Bureau. 2012. Nevada 2010: Summary Population and Housing Characteristics, 2010 Census of Population and Housing. December. CPH-1-30.115 pp.U.S. Census Bureau. 2013. Small Area Income and Poverty Estimates. [Web page]. Located at http://www.census.gov/did/www/saipe/data/interactive/#. Accessed: November 21, 2013.

U.S. Census Bureau. 2015. American Community Survey, 2009-2013. Series S1701, Poverty Status in the Past 12 Months. Duckwater Reservation, Ely Reservation. [Web page]. Located at http://factfinder.census.gov/. Accessed: July 29, 2015.

U.S. Census Bureau. 2017a. Small Area Income and Poverty Estimates. Ages 5 to 17 in Families in Poverty (School District), Year 2012. [Web page]. Located at http://www.census.gov/did/www/saipe/data/interactive/#. Accessed: on September 27, 2017. 1 pg.

U.S. Census Bureau. 2017b. Small Area Income and Poverty Estimates. All Ages in Poverty, 2012-Nevada-All Counties. [Web page]. Located at: http://www.census.gov/did/www/saipe/data/interactive/#. Accessed on September 27, 2017. 1 pg.

U.S. Department of Agriculture (USDA). 2009. Plant Materials Technical Note No. 11. Understanding Seeding Rates, Recommended Planting Rates, and Pure Live Seed (PLS). July. 4 pp. Natural Resources Conservation Service, Alexandria, Louisiana. [Web page]. Located at: https://www.nrcs.usda.gov/wps/portal/nrcs/rpublications/plantmaterials/technical/publications/?ptype=PR. Accessed: August 24, 2014.

USDA.. 2012. 2012 Agricultural Census. County Profiles: Eureka County and White Pine County. [Web Page]. Located at http://agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/Nevada/cp32033.pdf and http://agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/Nevada/cp32011.pdf. Accessed August 4, 2014.

USDA. 2014a. Census of Agriculture Nevada State and County Data, Volume 1, Geographic Area Series, Part 28. May 2. 439 pp. Located at: https://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/Nevada/. Accessed October 2, 2017.

USDA. 2014b. PLANTS Database. [Web page]. Located at http://plants.usda.gov/java/. Accessed: October 23, 2014.

USDA. 2014c. Natural Resource Conservation Service. Prime and Important Farmlands. [Web page]. Located at: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ak/soils/surveys/?cid=nrcs142p2_035988 Accessed: October 10, 2014. 2 pp.

U.S. Department of the Interior (USDI). 2013. Payments in Lieu of Taxes—Total Payments and Total Acres by State/County, Fiscal Year 2012-2013. [Web page]. Located at http://www.doi.gov/pilt/county-payments.cfm. Accessed: April 7, 2014.

U.S. Department of Transportation, National Highway Traffic Safety Administration (USDOT). 2013. Fatality Rates: Nevada. [Web page]. Located at http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/32_NV/2012/32_NV_2012.htm. Accessed: November 15, 2013.

U.S. Environmental Protection Agency (EPA). 1980. PSD Applicability, South Hospah Mine. Memorandum from Director of Division of Stationary Source Enforecement to Allyn Davis, Director, Air & Hazardous Materials Division, Region VI.4 pp.

EPA. 1998a. SLAMS / NAMS / PAMS Network Review Guidance Revised Final Report. Office of Air Quality Planning and Standards. March 27. 68 pp.

EPA. 1998b. United States Environmental Protection Agency. April 1998. Final Guidance For Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses. [Web page]. Located at http://www.epa.gov/region1/ej/pdfs/ej_guidance_nepa_epa0498.pdf. Accessed: November 21, 2013.

EPA. 2000. Meteorological Monitoring Guidance for Regulatory Modeling Applications. EPA-454/R-99-005. Office of Air Quality Planning and Standards. Research Triangle Park, NC. February. [Web page]. Located at https://www3.epa.gov/scram001/guidance/met/mmgrma.pdf. Accessed: September 5, 2017. 171 pp.

EPA. 2008a. Quality Assurance Handbook for Air Pollution Measurement Systems Volume IV: Meteorological Measurements Version 2.0 (Final). EPA-454/B-08-002. March. 191 pp. Located at: https://www3.epa.gov/ttn/amtic/files/ambient/met/Volume_IV_Meteorological_Measurements.pdf. Accessed September 5, 2017.

EPA. 2008b. AP-42, Fifth Edition, Volume I, Chapter 1: External Combustion Sources. Section 1.5 Liquified Petroleum Gas Combustion. July. 4 pp. Located at: https://www3.epa.gov/ttnchie1/ap42/ch01/c01s05.pdf. Accessed December 12, 2016.

EPA. 2011. PSD and Title V Permitting Guidance for Greenhouse Gases. EPA-457/B-11-001. Office of Air Quality Planning and Standards, Air Quality Policy Division, Research Triangle Park, NC. March. [Web page]. Located at: https://www.epa.gov/nsr/clean-air-act-permitting-greenhouse-gases. Accessed: September 18, 2017. 96 pp.

EPA. 2013. Enforcement and Compliance History Online (ECHO) database. [Web page]. Located at http://www.epa-echo.gov/echo/. Accessed: November 15, 2013.

EPA. 2014. USEPA 2014 STORET Central Warehouse Station Download. [Web page]. Located at http://ofmpub.epa.gov/storpubl/dw_pages.station_hub. Accessed: April 4, 2014.

EPA. 2015. The 2011 National Emissions Inventory version 2. March 4. [Web page]. Located at http://www.epa.gov/ttn/chief/net/2011inventory.html. Accessed: July 26, 2015.

EPA. 2017a. National Ambient Air Quality Standards Table. [Web page]. Located at https://www.epa.gov/criteria-air-pollutants/naaqs-table. Accessed: April 5, 2017. 3 pp.

EPA. 2017b. Current Nonattainment Counties for All Criteria Pollutants As of February 13, 2017. [Web page]. Located at https://www3.epa.gov/airquality/greenbook/ancl.html. Accessed: February 13, 2017. 14 pp.

EPA. 2017c. Nevada Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants. [Web page]. Located at https://www3.epa.gov/airquality/greenbook/anayo_nv.html. Accessed: February 13, 2017. 1 pg.

EPA. 2017d. Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II Ambient Air Quality Monitoring Program. January 2017. [Web page]. Located at https://www3.epa.gov/ttn/amtic/qalist.html. Accessed: April 5, 2017. 346 pp.

EPA. 2017e. Air Quality System. 2016 Ambient Air Quality Data for the Elko Station. [Web page]. Located at https://www.epa.gov/aqs. Accessed: February 9, 2017.

U.S. Fish and Wildlife Service (USFWS). 1918. Migratory Bird Treaty Act (1918 as amended). 16 U.S. Code § 703-712.

USFWS. 1973. 1973 Endangered Species Act. 7 U.S. Code §136. 16 U.S. Code §1531-1544.

USFWS. 2001. Executive Order 13186 of January 10, 2001. Responsibilities of Federal Agencies To Protect Migratory Birds. [Web page]. Located at https://www.fws.gov/birds/management/bird-conservation-partnership-and-initiatives/council-for-the-conservation-of-migratory-birds.php. Accessed: August 31, 2016. 4 pp.

USFWS. 2008. Birds of Conservation Concern 2008. U.S. Fish and Wildlife Service Division of Migratory Bird Management, Arlington, Virginia. 93 pp.

USFWS. 2012. Railroad Valley Springfish (Crenichthys nevadae). U.S. Fish and Wildlife Service, Nevada Fish & Wildlife Office. [Web page]. Located at http://www.fws.gov/nevada/protected_species/fish/species/rrv_springfish.html. Accessed: November 8, 2013.

USFWS. 2013a. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Southwestern Willow Flycatcher. Federal Register 78(2): 344-534. January 3.

USFWS. 2013b. USFWS National Wetlands Inventory. Wetlands Mapper. Available at: https://www.fws.gov/wetlands/data/mapper.html. Accessed November 12, 2013.

USFWS. 2014. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-billed Cuckoo. Federal Register 79(158): 48548-48652.

USFWS. 2015. Endangered and threatened wildlife and plants; 12-month finding on a petition to list Greater Sage-Grouse (Centrocercus urophasianus) as an endangered or threatened species. Federal Register 80(191): 59858-59942.

USFWS. 2016. Updated List of Threatened and Endangered Species that May Occur in Your Proposed Project Location, and/or May be Affected by Your Proposed Project. Gold Rock Mine Project, Event Code 08ENVD00-2016-E-00431. Nevada Fish and Wildlife Office, Reno, Nevada. June 21. 21 pp.

USFWS and Duckwater Shoshone Tribe. 2007. Safe Harbor Agreement with the Duckwater Shoshone Tribe to Recover the Railroad Valley Springfish (Crenichthys nevadae) at Big Warm Spring. 24 pp.

U.S. Forest Service (USFS). 2012. Griffon Definition Mineral Exploration Project. USDA Forest Service – Humboldt-Toiyabe National Forest Ely Ranger District Request for Comments/ Notice of Proposed Action. November 9. [Web page]. Located at http://data.ecosystem-management.org/nepaweb/nepa_project_exp.php?project=40143. Accessed: October 8, 2014.

USFS.2013. Humboldt-Toiyabe National Forest Ely Ranger District Geographic Information System Layer Files.

USFS. 2014a. USDA Forest Service Centennial-Seligman Mine Project Environmental Assessment. Ely Ranger District, Humboldt-Toiyabe National Forest, White Pine County, Nevada. June 2014.

USFS 2014b. Draft Decision Notice and Finding of No Significant Impact (FONSI) for the Green Springs Mineral Exploration Project. No Date. [Web page]. Located at http://www.fs.usda.gov/wps/portal/fsinternet/!ut/p/c5/04_SB8K8xLLM9MSSzPy8xBz9CP0os3gDfxMDT8MwRydLA1cj72BTUwMTAwgAykeaxRtBeY4WBv4eHmF-YT4GMHkidBvgAI6EdIeDXIvfdrAJuM3388jPTdUvyA2NMMgyUQQAyrgQmg!!/dl3/d3/L2dJQSEvUUt3QS9ZQnZ3LzZfS000MjZOMDcxT1RVODBJN0o2MTJQRDMwODQ!/?project=44115. Accessed: August 23, 2014. 15 pp.

U.S. Geological Survey (USGS). 2005. Preliminary integrated geologic map databases for the United States - western states: California, Nevada, Arizona, Washington, Oregon, Idaho, and Utah. USGS Open-File Report 2005-1305. [Web page]. Located at http://mrdata.usgs.gov/geology/state/state.php?state=NV. Accessed: December 2, 2013.

USGS 2009. 2009 Earthquake Probability Mapping. [Web Page]. Located at http://geohazards.usgs.gov/eqprob/2009/. Accessed: October 30, 2014.

USGS. 2013. National Hydrologic Dataset.

USGS. 2014a. National Water Information System Groundwater for USA water levels 390730115382301 173B N15 E56 35ACBB1 EZ-JR Well Site. [Web Page]. Located at http://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=390730115382301. Accessed: February 12, 2014.

USGS. 2014b. National Water Information System Groundwater for USA water levels 390905112013O1 173B N17 E57 17DCDB1 USBLM. [Web page]. Located at http://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=390905115201301. Accessed: February 12, 2014.

USGS. 2014c. National Water Information System Groundwater for USA water levels annual data 391812115390501 154. [Web page]. Located at http://nwis.waterdata.usgs.gov/nwis/gwlevels?site_no=391812115390501&agency_cd=USGS&format=html. Accessed: February 18, 2014.

USGS. 2014d. National Water Information System Surface Water annual statistics mean flow 10246835 Big Warm Springs.pdf. [Web page]. Located at http://waterdata.usgs.gov/. Accessed: February 20, 2014.

USGS. 2014e. National Water Information System Groundwater for USA. Query using coordinates. Located at http://nwis.waterdata.usgs.gov/nwis/uv. Accessed: April 2, 2014.

USGS. 2014f. Sage-Grouse Management Category Geographic Information System files. Western Ecological Research Center, Dixon Field Station, Dixon. CA. Nevada Sagebrush Ecosystem Program, Carson City, NV. August.

USGS. 2016. Sage-Grouse Management Category Geographic Information System files pertaining to the Midway project region. Western Ecological Research Center, Dixon Field Station, Dixon. CA. Nevada Sagebrush Ecosystem Program, Carson City, NV. September.

USGS Western Ecological Research Center (WERC Research Team). 2015. July 2015 Progress Update – Sage-Grouse Research (Midway). Prepared for Midway Gold, NDOW, BLM by U.S. Geology Survey, WERC Research Team. 6 pp.

USGS and NBMG. 2010. Quaternary Fault and Fold Database for the United States. [Web Page]. Located at http://earthquakes.usgs.gov/regional/qfaults. Updated: November 3, 2010. Accessed: October 3, 2014.

U.S. Global Change Research Program (USGCRP). 2016. About USGCRP. [Web Page]. Located at http://www.globalchange.gov/about. Accessed: July 9, 2016.

U.S. National Aeronautics and Space Administration (NASA). 2017a. NASA Space Place (Explore Earth and Space!): Troposphere. [Web page]. Located at https://spaceplace.nasa.gov/troposphere/en/. Accessed: April 4, 2017. 3 pp.

NASA. 2017b. Protecting our Planet: Observing & Understanding Inform Mitigation Policy; Aura's Ozone Monitoring Instrument (OMI) & Microwave Limb Sounder (MLS). Available at: https://aura.gsfc.nasa.gov/informing_policy_makers.html. Accessed: April 4, 2017. 4 pp.

University of California University of Paleontology (UCMP). 2013a. UCMP Specimen Search. Search results for Plants, Nevada, Nye County, and Cenozoic. [Web page]. Located at http://ucmpdb.berkeley.edu/. Accessed: November 14, 2013.

UCMP. 2013b. UCMP Specimen Search results for Vertebrates, Nevada, and White Pine County. [Web page]. Located at http://ucmpdb.berkeley.edu/. Accessed: November 11, 2013.

UCMP. 2013c. UCMP Specimen Search results for Vertebrates, Nevada, and Quaternary. [Web page]. Located at http://ucmpdb.berkeley.edu/. Accessed: November 11, 2013. (3.4)

University of Nevada Reno, Nevada Seismological Laboratory (UNR-NSL). 2013. The Nevada Broadcast of Earthquakes. [Web page]. Located at http://www.seismo.unr.edu/Earthquake. Accessed: November 15, 2013.

Upper Green River Basin Sage-Grouse Working Group (UGRBSGWG). 2007. Upper Green River Basin Sage-Grouse Conservation Plan. May 24, 2007. 147 pp.

Van Denburgh, A.S. and F. Eugene Rush. 1974. Water Resources-Reconnaissance Series, Report 60. Water-Resources Appraisal of Railroad and Penoyer Valleys, East-Central Nevada. Division of Water Resources, Carson City. Prepared cooperatively by the USGS. 72 pp.

ViewPoint Consulting & Design. 2012. Final Visual Baseline Study Report. Visual Resources and Landscape Aesthetics, Pan Project, White Pine County, NV. January 20, 2012.

Wagner, Frederic. 2003. Preparing for a Changing Climate: The Potential Consequences of Climate Variability and Change. A Report of the Rocky Mountain/Great Basin Regional Assessment Team for the U.S. Global Change Research Program. Utah State University. January 2003. 245 pp.

Wald, D.J., Quitoriano, V., Heaton, T.H., and H. Kanamori. 1999. Relationships between Peak Ground Acceleration, Peak Ground Velocity, and Modified Mercalli Intensity in California. Earthquake Spectra. 15(3): 557-564.

Wallestad, R. 1975. Life History and Habitat Requirements of Sage Grouse in Central Montana. Montana Department of Fish and Game, Game Management Division. 65 pp.

Walsh, J., D. Wuebbles, K. Hayhoe, J. Kossin, K. Kunkel, G. Stephens, P. Thorne, R. Vose, M. Wehner, J. Willis, D. Anderson, S. Doney, R. Feely, P. Hennon, V. Kharin, T. Knutson, F. Landerer, T. Lenton, J. Kennedy, and R. Somerville. 2014. Ch. 2: Our Changing Climate. Climate Change Impacts in the United States: The Third National Climate Assessment, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 19-67. doi:10.7930/J0KW5CXT. [Web page]. Located at http://nca2014.globalchange.gov/downloads. Accessed: July 8, 2016.

Watt, J.T. and Ponce, D.A. 2007. Geophysical Framework Investigations Influencing Ground-water Resources in East-central Nevada and West-central Utah. [Web page]. Located at http://pubs.usgs.gov/of/2007/1163/. Accessed: September 1, 2016.

Welch, A.H., Bright, D.J., and L.A. Knochenmus (eds). 2007. Water Resources of the Basin and Range Carbonate-Rock Aquifer System, White Pine County, Nevada, and Adjacent Areas in Nevada and Utah. A Report to Congress. Scientific Investigations Report 2007-5261.

Western Regional Climate Center (WRCC). 2013a. Mean Temperature for Eureka site, NV, Western U.S. Climate Historical Summaries, Western Regional Climate Center [Web page]. Located at http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nv270 . Accessed: November 13, 2013.

WRCC. 2013b. Eureka, Nevada (262708) Period of Record Monthly Climate Summary. Period of Record: 4/1/1888 to 3/31/2013. [Web page]. Located at http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nv2708. Accessed: November 17, 2013.

WRCC. 2013c. Monthly climate summary for Eureka site, NV, Western U.S. Climate Historical Summaries, Western Regional Climate Center [Web page]. Located at http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nv2708. Accessed: November 13, 2013.

WRCC. 2013d. NOAA Coop Station Metadata. [Web page]. Located at http://www.wrcc.dri.edu/inventory/sodnv.html Accessed on: November 17, 2013.

WRCC. 2017a. Eureka, Nevada (262708), Period of Record Monthly Climate Summary, Period of Record: 04/01/1888 to 06/10/2016. [Web page]. Located at https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?nv2708. Accessed: July 5, 2017.

WRCC. 2017b. Eureka, Nevada, Total of Precipitation (Inches), (262708). [Web page]. Located at https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?nv2708. Accessed: July 5 and 28, 2017.

WRCC. 2017c. Eureka, Nevada, Total of Snowfall (Inches), (262708). [Web page]. Located at https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?nv2708. Accessed: July 28, 2017.

White Pine County. 2009. White Pine County Land Use Plan. January 2009. [Web page]. Located at http://nv-whitepinecounty.civicplus.com/documentcenter/view/169. Accessed: July 16, 2013. 346 pp.

White Pine County. 2011. White Pine County Final Budget for the Fiscal Year Ending June 30, 2012. [Web page]. Located at http://nsla.nevadaculture.org/statepubs/epubs/31428003048200-2011-2012.pdf. Accessed: November 21, 2013. 98 pp.

White Pine County. 2012a. 2011 Comprehensive Economic Development Strategy. Community and Economic Development. April 4. [Web page]. Located at http://whitepinecounty.net/DocumentCenter/View/158. Accessed: November 25, 2013. 139 pp.

White Pine County. 2012b. White Pine County Housing Value Needs Assessment, White Pine County. Community and Economic Development. May 8, 2012. 106 pp.

White Pine County. 2012c. White Pine County Final Budget for the Fiscal Year Ending June 30, 2013. [Web page]. Located at http://nsla.nevadaculture.org/statepubs/epubs/31428003048200-2012-2013.pdf. Accessed: November 21, 2013. 95 pp.

White Pine County Public Land Users Advisory Committee (WPCPLUAC). 2007. 2007 White Pine County Public Lands Policy Plan. August 2007. [Web page]. Located at http://lands.nv.gov/docs/SLUPA/WhitePinePlan.pdf. Accessed: July 1, 2012.

White Pine County Tourism and Recreation Board. 2013. A Great Place to Visit (interactive website). [Web page]. Located at http://www.elynevada.net/planvisit/lodging.html. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions. (

White Pine County Water Advisory Committee (WPCWAC). 2006. White Pine County Water Resources Plan. [Web page]. Located at http://www.ndep.nv.gov/bffwp/whitepine_county_sb62.htm. Accessed: November 25, 2013.

Wildlife Action Plan Team. 2012. Nevada Wildlife Action Plan. Nevada Department of Wildlife, Reno.

Wildlife Action Plan Team. 2013. Nevada Wildlife Action Plan. Nevada Department of Wildlife, Reno, Nevada. [Web page]. Located at http://www.ndow.org/Nevada_Wildlife/Conservation/Nevada_Wildlife_Action_Plan/. Accessed: November 8, 2013.

William Bee Ririe Hospital. 2013. General Information. [Web page]. Located at http://www.wbrhely.org/getpage.php?name=index. Accessed: October 3, 2013. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

William Bee Ririe Hospital and Rural Health Clinic. 2017. We will now be providing medical care to the residents of Eureka County. [Web page]. Located at http://www.wbrhely.org/. Accessed: August 26, 2017. 5 pp.

Williams, T. 2013a. Personal Communication [Nov 21 Memorandum To Dan Netcher Regarding Alternatives Considered For Gold Rock Mine In the Design Process. 7 pp.

Williams, Tom. 2013b. Personal communication [Dec 13 telephone call] between Elizabeth Duvall and Tom Williams regarding pit stability analysis, number of stages of crushing, number of water systems, ore processing methods, power supply, existing roads, water pipeline, Plan area boundary, marking of fences to minimize collision by greater sage-grouse, existing fencing, materials to be used on site, area of exploration disturbance, e-mails lost during scoping, and alternatives.

Williams, T. 2014a. Personal communication [Aug 26 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: Midway Gold questions pertaining to water use]. Vice President Environmental Affairs, Midway Gold, Englewood, Colorado. 3 pp.

Williams, T. 2014b. Personal communication [Apr 21 e-mail to E. Duvall, ARCADIS, Phoenix, Arizona. RE: second water supply well]. Vice President Environmental Affairs, Midway Gold, Englewood, Colorado. 2 pp.

Williams, T. 2014c. Personal communication [Aug 26 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: Midway Gold questions pertaining to agency and Midway comments in Chapter 2]. Vice President Environmental Affairs, Midway Gold, Englewood, Colorado. 4 pp.

Williams, T. 2014d. Personal communication [Feb 14 email to E. Duvall, ARCADIS, Phoenix, Arizona. RE: fencing under the Proposed Action]. Vice President Environmental Affairs, Midway Gold, Englewood, Colorado. 2 pp.

Williams, T. 2014e. Personal communication [Aug 22 e-mail to E. Duvall, ARCADIS, Phoenix, Arizona. RE: road base for existing roads to Plan area]. Vice President Environmental Affairs, Midway Gold, Englewood, Colorado. 1 pg.

Williams, T. 2014f. Personal communication [Aug 28 e-mail to E. Duvall, ARCADIS, Phoenix, Arizona. RE: 2013 revision to Midway's 2012 Amendment boundary to include siting of an observation well]. Vice President Environmental Affairs, Midway Gold, Englewood, Colorado. 2 pp. (pg 1-4)

Williams, T. 2014g. Personal communication [Jul 24 e-mail to E. Duvall, ARCADIS, Phoenix, Arizona. RE: road base for existing roads to Plan area]. Vice President Environmental Affairs, Midway Gold, Englewood, Colorado. 3 pp.

Williams, T. 2014h. Personal communication [Aug 3 e-mail to E. Duvall, ARCADIS, Phoenix, Arizona. RE: 9_3_14 questions comp vehicles substation BBCS ECP]. Vice President Environmental Affairs, Midway Gold, Englewood, Colorado. 3 pp. 09-03 comp vehicles

Williams, T. 2014i. Personal communication [Jun 26 e-mail to E. Duvall, ARCADIS, Phoenix, Arizona. RE: NW Main Access Route Alt_WPCC comments]. Vice President Environmental Affairs, Midway Gold, Englewood, Colorado. 3 pp.

Williams, T. 2016a. Personal communication [Jun 15 e-mail to E. Duvall, ARCADIS, Phoenix, Arizona. RE: Gold Rock – water use]. Vice President Environmental Affairs, GRP Minerals, Englewood, Colorado. 3 pp.

Williams, T. 2016b. Personal communication [Nov 23 e-mail to E. Duvall, ARCADIS, Phoenix, Arizona. RE: Gold Rock – update on power use]. Vice President Environmental Affairs, GRP Minerals, Englewood, Colorado. 3 pp.

Wilson, J.W. 2007. Water-Level Surface Maps of the Carbonate-Rock and Basin-Fill Aquifers in the Basin and Range Carbonate-Rock Aquifer System, White Pine County, Nevada, and Adjacent Areas in Nevada and Utah. Scientific Investigations Report 2007-5089.

Wisdom, M.J., C.W. Meinke, S.T. Knick, and M.A. Schroeder. 2011. Factors associated with extirpation of Sage-Grouse. Pp. 451–472 in S. T. Knick and J. W. Connelly (editors). Greater Sage-Grouse: ecology and conservation of a landscape species and its habitats. Studies in Avian Biology (vol. 38), University of California Press, Berkeley, CA.

Zunino, Ben. 2007. Superintendent, Eureka County School District. Personal communication with G. Blankenship, Blankenship Consulting LLC. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

Zunino, Ben. 2013. Superintendent, Eureka County School District. Personal communication with G. Blankenship, Blankenship Consulting LLC. As cited in Blankenship Consulting LLLC and SAMMONS/DUTTON LLC. 2013. Gold Rock Project: Baseline Socioeconomic and Environmental Justice Conditions.

8.2 ACRONYMS AND ABBREVIATIONS

ABA	Acid-Base Accounting
ACEC	Areas of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ADR	adsorption, desorption, and regeneration
afy	acre-feet per year
AIRFA	American Indian Religious Freedom Act
AML	Appropriate Management Level
amsl	above mean sea level
ANFO	Ammonium Nitrate / Fuel Oil Mixture
APE	area of potential effect
APLIC	Avian Power Line Interaction Committee
AQDMS	U.S. Environmental Protection Agency Air Quality Data Mart System
ARPA	Archaeological Resources Protection Act of 1979
ARMPA	Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment
ATV	all-terrain vehicle
AUM	animal unit month
BAPC	Nevada Division of Environmental Protection Bureau of Air Pollution Control
BAQP	Nevada Division of Environmental Protection Bureau of Air Quality Planning
BARCAS	Basin and Range Carbonate Rock Aquifer System
BATFE	Bureau of Alcohol, Tobacco, Firearms, and Explosives
BEA	United States Bureau of Economic Analysis
bgs	Below Ground Service
BBCS	Bird and Bat Conservation Strategy
BBS	Breeding Bird Survey
BLM	Bureau of Land Management
BMP	Best Management Practice
BCCRT	Basic County-City Relief Tax
BOC	Barge Operating Channel

CAA	Clean Air Act
Census	United States Bureau of the Census
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CESA	Cumulative Effects Study Area
CFR	Code of Federal Regulations
cfs	Cubic Feet Per Second
cm/sec	Centimeters Per Second
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
°F	Degrees Fahrenheit
dBA	A-weighted Decibel
DEIS	Draft Environmental Impact Statement
DOE	Department of Energy
DR	Decision Record
Duckwater Shoshone Tribe	Duckwater Shoshone Tribe of the Duckwater Shoshone Reservation, Nevada
EA	Environmental Assessment
EFO	Egan Field Office
EIS	Environmental Impact Statement
EMS	Emergency Medical Service
EMT	Emergency Medical Technician
EO	Executive Order
EPA	Environmental Protection Agency
EPM	Environmental Protection Measure
ESA	Endangered Species Act of 1973
ESD	Ecological Site Descriptions
ET	Evapotranspiration
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration

FLPMA	Federal Land Policy and Management Act
FMMP	Fluid Management and Monitoring Plan
FONSI	Finding of No Significant Impact
GAP	Gap Analysis Program
GBNP	Great Basin National Park
GHG	Greenhouse Gas
GRSG LUPA	Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment
GHMA	General Habitat Management Area
GID	General Improvement District
GLO	General Land Office
gpd	Gallons Per Day
gpm	Gallons Per Minute
HAP	Hazardous Air Pollutants
HCT	Humidity Cell Test
HDPE	High Density Polyethylene
HMA	Herd Management Area
KOP	Key Observation Point
kV	Kilovolt
lbs/acre	Pounds Per Acre
L_{90}	sound pressure level exceeded 90 percent of the time analyzed
L_{eq}	“average” or median sound pressure level
LLC	Limited Liability Company
LPSL	Low-Permeability Soil Layer
LR2000	Legacy Rehost 2000 System
LSST	Local School Support Tax
MACT	Maximum Achievable Reduction Technology
Midway	Midway Gold US Inc.
mg/L	milligrams per liter
MGD	Million Gallons Per Day
mmBtu/hr	million British thermal units per hour
MOU	Memorandum of Understanding

MOVES	Motor Vehicle Emission Simulator
MSHA	Mine Safety and Health Administration
MWMP	Meteoric Water Mobility Procedure
MWP	Mount Wheeler Power Company
NAAQS	National Ambient Air Quality Standards
NvAAQS	Nevada Ambient Air Quality Standards
NAC	Nevada Administrative Code
NAGPRA	Native American Graves Protection and Repatriation Act
NDEP	Nevada Division of Environmental Protection
NDF	Nevada Division of Forestry
NDOM	Nevada Division of Minerals
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NDWR	Nevada Division of Water Resources
NEPA	National Environmental Policy Act of 1969
NHD	National Hydrography Dataset
NHP	Nevada Highway Patrol
NHPA	National Historic Preservation Act of 1966
NNHP	Nevada Natural Heritage Program
NOA	Notice of Availability
NOI	Notice of Intent
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
N_2O	nitrous oxide
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSHEP	National Emission Standards for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NSR	New Source Review
NTT	Sage-Grouse National Technical Team
O_3	Ozone

OHMA	Other Habitat Management Area
opt	ounces per ton
PAG	Potentially Acid Generating
PGA	Peak Ground Acceleration
PHMA	Priority Habitat Management Area
PILT	Payment In Lieu of Taxes
Plan	Gold Rock Mine Plan of Operations
PLS	Pure Live Seed
PLUAC	Public Land Users Advisory Committee
PM	particulate matter
$PM_{2.5}$	particulate matter 2.5 microns
PM_{10}	particulate matter 10 microns
PMU	Population Management Unit
ppm	Parts Per Million
PSD	Prevention of Significant Deterioration
RAC	Resource Advisory Council
RCRA	Resource Conservation and Recovery Act
RFFA	Reasonably Foreseeable Future Actions
RMP	Resource Management Plan
ROD	Record of Decision
ROW	Right-of-Way
SEC	Nevada Sagebrush Ecosystem Council
SEP	Nevada Sagebrush Ecosystem Program
SETT	Nevada Sagebrush Ecosystem Technical Team
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SNWA	Southern Nevada Water Authority
SO_2	sulphur dioxide
SPCC	Spill Prevention, Control, and Countermeasures
SR	State Route
SRMA	Special Recreation Management Area

SCCRT	Supplemental County-City Relief Tax
SWIP	Southwest Intertie Project
TCP	Traditional Cultural Property
tpd	Tons Per Day
tph	Tons Per Hour
µg/m^3	Micrograms Per Cubic Meter of Air
µS/cm	Microsiemens Per Centimeter
US	United States (U.S.)
USDOT	United States Department of Transportation
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOCs	volatile organic compounds
VRM	Visual Resource Management
WAD	Weak Acid Dissociable
WPCP	Water Pollution Control Permit
WRA	Whole Rock Analysis
WRCC	Western Regional Climate Center
WRDA	Waste Rock Disposal Area
WSA	Wilderness Study Area

8.3 GLOSSARY

Acid Mine Drainage: Water from pits, underground workings, and waste rock containing free sulfuric acid. The formation of acid drainage is primarily due to the weathering of iron pyrite and other sulfur-containing minerals. Acid drainage can mobilize and transport heavy metals which are often characteristic of metal deposits.

Acid Rock Drainage (ARD): Drainage that occurs as a result of natural oxidation of sulfide minerals contained in rock that is exposed to air and water. It is not confined to mining activities, but can occur wherever sulfide-bearing rock is exposed to air and water.

Acre: A unit of land measure equal to 43,560 square feet.

Acre-foot: The amount of water or sediment volume which covers an acre of land to a depth of one foot; an acre-foot is equal to 325,851 gallons or 43,560 cubic feet.

Affecting: Will or may have an effect on.

Alluvium: A general term for clay, silt, sand, gravel, or similar unconsolidated detrital material, deposited during comparatively recent geologic time by a stream or other body of running water.

Alluvial Fan: A low, outspread, gently sloping mass of loose rock material, shaped in plan view like an open fan or a segment of a cone; deposited by a stream at the place where it issues from a narrow mountain valley upon a plain or broad valley, or where a tributary stream is near or at its junction with the main stream, or wherever a constriction in a valley abruptly ceases or the gradient of the stream suddenly decreases.

Animal Unit Month (AUM): The amount of forage required by one cow and calf, or their equivalent, for one month.

Aquifer: A zone, stratum, or group of strata acting as a hydraulic unit that stores or transmits water in sufficient quantities for beneficial use.

Bedrock: Solid rock exposed at the surface of the earth or overlain by unconsolidated material, weathered rock, or soil.

Borehole: A hole with a drill, auger, or other tools for exploring strata in search of minerals, for water supply, for blasting purposes, for proving the position of old workings and faults, and for releasing accumulations of gas or water.

Cooperating Agency: Any Federal agency other than a lead agency which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment. The selection and responsibilities of a cooperating agency are described in Section 1501.6. A State or local agency of similar qualifications or, when the effects are on a reservation, an Indian Tribe, may by agreement with the lead agency become a cooperating agency.

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

Deposit: A natural accumulation, such as precious metals, minerals, coal, gas, oil, etc., that may be pursued for its intrinsic value; gold deposit.

Designated Basin: Groundwater basin where permitted ground water rights approach or exceed the estimated average annual recharge and the water resources are being depleted or require additional administration.

Dewatering: The removal or extraction of water from a pit, tunnel, or other conduit containing volumes of water.

Doré: Metal alloy composed of gold, silver, and other precious metals. Bullion containing unseparated metallic gold and silver.

Downgradient: In relation to any fixed point with regard to the direction of drainage or flow, downgradient is at a lower point of elevation than the chosen observation point and thus downward in relation to the direction of flow.

Drawdown: Vertical distance that a water elevation is lowered or the pressure head is reduced due to the removal of water from the same system.

Drill Pad: An earthen platform/bench created to provide stable support for a drill rig during drilling activities.

Effects include:

(a) Direct effects, which are caused by the action and occur at the same time and place.

(b) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

Environmental Document: Includes the documents specified in the National Environmental Policy Act, Sec. 1508.9 (environmental assessment), Sec. 1508.11 (environmental impact statement), Sec. 1508.13 (finding of no significant impact), and Sec. 1508.22 (notice of intent).

"Environmental impact statement" means a detailed written statement as required by section 102(2)(C) of the Act.

Ephemeral Drainage: A channel or drainage that flows only in direct response to precipitation or snow melt. Such flow is usually of short duration.

Erosion: The wearing away of the land surface by running water, wind, ice or other geologic agents, including such processes as gravitation creep.

Exploration: The search for economic deposits of minerals, ore, gas, oil, or coal through the practices of geology, geochemistry, geophysics, drilling, shaft sinking and/or mapping.

Extraction: The process of mining and removal of coal or ore from a mine. Also used in relation to all process of obtaining metals from ores.

Feasible: Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

Federal Agency: All agencies of the Federal Government. It does not mean the Congress, the Judiciary, or the President, including the performance of staff functions for the President in his Executive Office. For the purposes of regulation it includes States and units of general local government and Indian tribes assuming NEPA responsibilities under section 104(h) of the Housing and Community Development Act of 1974.

Forage: All browse and non-woody plants that are available to livestock or game animals for grazing or harvestable for feed.

Forb: An herbaceous flowering plant other than a grass.

Fugitive Dust: Dust particles suspended randomly in the air from road travel, excavation and rock loading operations.

Geochemistry: The study of the distribution and amounts of the chemical elements in minerals, ores, rocks, soils, water, and the atmosphere, and their circulation in nature, on the basis of the properties of their atoms and ions. The geology in chemistry concerned with the chemical composition of, and chemical reactions taking place within, the earth's crust.

Geotechnical: A branch of engineering that is essentially concerns with the engineering design aspects of slope stability, settlement, earth pressures, bearing capacity, seepage control, and erosion.

Groundwater: Water found beneath the land surface in the zone of saturation below the water table.

Growth Media: All materials, including topsoil, specified soil horizons, vegetative debris, and organic matter, which are classified as suitable for stockpiling and/or reclamation.

Haul Road: A road used by large (<50 ton capacity) trucks to haul ore and waste rock from an open pit mine to other locations.

Heap Leaching: An ore extraction method used for low to moderate grade ores, which involves placing the ore in a mound and then "leaching" by percolation of a solution which dissolves target metals from the rock.

Heavy Metals: A group of elements, usually acquired by organisms in trace amounts, that are often toxic in higher concentrations; includes lead, mercury, molybdenum, nickel, copper, cobalt, chromium, iron, silver, etc.

HDPE (High Density Polyethylene): A plastic impermeable material used for liners. This material deforms with a low probability of puncturing or splitting. Seams are heat welded instead of glued, thus preventing rupture.

Human Environment: Shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. (See the definition of "effects" (Sec. 1508.8).) This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment.

Hydrographic Basin: An extent or an area of land where surface water from rain and melting snow or ice converges to a single point, in the basin, where the waters join another waterbody, such as a river, lake, reservoir, estuary, wetland, sea, or ocean.

Hydraulic Conductivity: A measure of the ability of material to permit the flow of water under a gradient; permeability.

Irreversible and Irretrievable Commitments of Resources: Irreversible commitments of resources occurs when, once committed to the proposed project components, the resource would continue to be committed throughout the life of the proposed project. An irretrievable commitment of the resources refers to those resources that, once used, consumed, destroyed or degraded during construction, operations, or decommissioning of the proposed project components, would cause the resource to be unavailable for use by future generations.

Key Observation Point (KOP): A specific place on a travel route or within an existing or potential use area where the view of a management activity or project would be most revealing for purposes of the contrast rating.

L_{50}, L_{90}: The n-percent exceeded level, Ln, is the sound pressure level exceeded for n percent of the time. In other words, for n percent of the time, the fluctuating sound pressure levels are higher than the Ln level. Ln can be obtained by analyzing a given noise by statistical means. L_{50} is the noise level exceeded for 50 percent of the time. It is statistically the mid-point of the noise readings. It represents the median of the fluctuating noise levels. L_{90} is the level exceeded for 90 percent of the time. For 90 percent of the time, the noise level is above this level. It is generally considered to be representing the background or ambient level of a noise environment. (from: http://www.epd.gov.hk/epd/noise_education/web/ENG_EPD_HTML/m2/types_3.html)

Lead Agency: The agency or agencies preparing or having taken primary responsibility for preparing the environmental impact statement.

Leaching: The process of applying a chemical agent that bonds preferentially and dissolves into solution the target metal (s) in an ore. The metal complexes or binds to the solution, which is then called a "pregnant" solution. The pregnant solution is collected for processing to recover the metals.

Locatable Minerals: Generally refers to hardrock minerals on Public Domain lands or National Forest System lands reserved from the Public Domain that are mined and processed to recover metals, such as gold and copper, chemical grade limestone, and asbestos.

Major Federal Action: Includes actions with effects that may be major and which are potentially subject to Federal control and responsibility. Major reinforces but does not have a meaning independent of significantly (Sec. 1508.27). Actions include the circumstance where the responsible officials fail to act and that failure to act is reviewable by courts or administrative tribunals under the Administrative Procedure Act or other applicable law as agency action.

(a) Actions include new and continuing activities, including projects and programs entirely or partly financed, assisted, conducted, regulated, or approved by federal agencies; new or revised agency rules, regulations, plans, policies, or procedures; and legislative proposals (Secs. 1506.8, 1508.17). Actions do not include funding assistance solely in the form of general revenue sharing funds, distributed under the State and Local Fiscal Assistance Act of 1972, 31 U.S.C. 1221 et seq., with no Federal agency control over the subsequent use of such funds. Actions do not include bringing judicial or administrative civil or criminal enforcement actions.

(b) Federal actions tend to fall within one of the following categories:

Adoption of official policy, such as rules, regulations, and interpretations adopted pursuant to the Administrative Procedure Act, 5 U.S.C. 551 et seq.; treaties and international conventions or agreements; formal documents establishing an agency's policies which will result in or substantially alter agency programs.

Adoption of formal plans, such as official documents prepared or approved by federal agencies which guide or prescribe alternative uses of Federal resources, upon which future agency actions will be based.

Adoption of programs, such as a group of concerted actions to implement a specific policy or plan; systematic and connected agency decisions allocating agency resources to implement a specific statutory program or executive directive.

Approval of specific projects, such as construction or management activities located in a defined geographic area. Projects include actions approved by permit or other regulatory decision as well as federal and federally assisted activities.

Milling: The general process of treating or to separate and concentrate the valuable metal(s) or mineral(s) from the rest of the ore material.

Mine Pit: Surface area from which ore and waste rock are removed.

Mineral Entry: The filing of a mining claim upon Public Domain or related land to obtain the right to any minerals it may contain. Valid mining claims may be purchased in full (patented) under the 1872 mining law, as amended.

Mining Claim: A portion of the Public Domain or related lands which a miner, for mining purposes, takes and holds in accordance with mining laws.

Mitigation includes:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action.

(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

(e) Compensating for the impact by replacing or providing substitute resources or environments.

NEPA Process: All measures necessary for compliance with the requirements of section 2 and Title I of the National Environmental Policy Act (NEPA).

Notice of Intent: A notice that an environmental impact statement will be prepared and considered. The notice shall briefly:

(a) Describe the proposed action and possible alternatives.

(b) Describe the agency's proposed scoping process including whether, when, and where any scoping meeting will be held.

(c) State the name and address of a person within the agency who can answer questions about the proposed action and the environmental impact statement.

"Proposal" exists at that stage in the development of an action when an agency subject to the Act has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing that goal and the effects can be meaningfully evaluated. Preparation of an environmental impact statement on a proposal should be timed (Sec. 1502.5) so that the final statement may be completed in time for the statement to be included in any recommendation or report on the proposal. A proposal may exist in fact as well as by agency declaration that one exists.

Open Pit Mining: A type of mining that involves excavation of ore by digging downward from the ground surface, removing the overburden and extracting the ore beneath. The result of the mining operation is an "open pit."

Ore: An earth material containing target metal(s) or mineral(s) in sufficient concentration and quantity which may be mined and processed at an economic profit.

Patented Claims: Private land which has been secured from the U.S. Government by compliance with the laws relating to such lands.

Permeability: see hydraulic conductivity.

pH: Symbol for the negative common logarithm of the hydrogen ion concentration (acidity) of a solution. The pH value of 7 is considered neutral. A pH value below 7 indicates acidity, and a pH value above 7 indicates alkalinity or a base.

Plan of Operations (Plan or PoO): A detailed description presenting the methods, timing, and contingencies to be used during the operation of the Project. A document required from any person proposing to conduct mineral related activities which utilize earth moving equipment and which will cause disturbance to surface resources.

Precious Metal: Any of the less common and highly valuable metals; gold, silver, platinum.

Pregnant Solution: The resulting metal-laden solution collected from the leaching of ore which contains dissolved metal values. The precious metals values are recovered from this pregnant solution, which then becomes the barren solution that is typically refortified with necessary reagents and reintroduced into the leaching circuit.

Pristine: unaffected by air pollution" or "free of airborne pollutants (NPS 2002); for the purpose of describing existing conditions for air quality in this EIS: "subject to few nearby emission sources and therefore exhibiting concentrations of criteria air pollutants that are close to zero, zero, or below detection limits using current monitoring techniques and therefore unmeasurable".

Pure Live Seed: The percentage of seed (i.e., good viable seed) that has the potential to germinate within a measured one pound weight of any seed lot (USDA 2009).

Reclamation: Returning disturbed land to a form and productivity in conformity with a predetermined land management plan or a government approved plan or permit.

Record of Decision: A document separate from but associated with an Environmental Impact Statement which states the decision; identifies all alternatives, specifying which were environmentally preferable; and states whether all practicable means to avoid environmental harm from the alternative have been adopted, and if not, why not (40 CFR 1505.2).

Relationships Between Short-Term Use and Long-Term Productivity: Those relationships which tie short-term use to the long-term condition and viability of a given resource value (an example would be the long-term effects of overgrazing on range productivity and condition).

Riparian: Pertaining to or situated on the bank of a body of water, especially of a watercourse such as a river.

Scope: Consists of the range of actions, alternatives, and impacts to be considered in an environmental impact statement. The scope of an individual statement may depend on its relationships to other statements (Secs.1502.20 and 1508.28). To determine the scope of environmental impact statements, agencies shall consider three types of actions, three types of alternatives, and three types of impacts. They include:

(a) Actions (other than unconnected single actions) which may be:

Connected actions, which means that they are closely related and therefore should be discussed in the same impact statement. Actions are connected if they:

(i) Automatically trigger other actions which may require environmental impact statements.

(ii) Cannot or will not proceed unless other actions are taken previously or simultaneously.

(iii) Are interdependent parts of a larger action and depend on the larger action for their justification.

Cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement.

Similar actions, which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography. An agency may wish to analyze these actions in the same impact statement. It should do so when the best way to assess adequately the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in a single impact statement.

(b) Alternatives, which include:

No action alternative.

Other reasonable courses of actions.

Mitigation measures (not in the proposed action).

(c) Impacts, which may be: (1) Direct; (2) indirect; (3) cumulative.

Significantly: As used in NEPA requires considerations of both context and intensity:

(a) Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

(b) Intensity. This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:

1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

2) The degree to which the proposed action affects public health or safety.

3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

4) The degree to which the effects on the quality of the human environment are likely to be controversial.

5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

8) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

Silicification: The introduction of, or replacement by, silica, generally resulting in the formation of fine-grained quartz, chalcedony, or opal, which may fill pores and replace existing minerals.

Stockpile: An accumulation of ore, stone, or other mined or quarried material.

Surface Water: Water found in ponds, lakes, inland seas, streams, and rivers or above the ground surface.

Tailings: Crushed ore that has been washed or treated and is regarded as too poor to be treated further.

Tailings Storage Facility (TSF): A reservoir controlled by one or more embankments to store mine tailings and mine process water.

Third-Party Contractor: An independent firm contracted by a government agency to perform work related to a proposed action or another organization; due to the financial and contractual arrangements governing such relationships, the third-party contractor has no financial or other interest in the decision to be reached on the project.

Undesignated Basin: Groundwater basin where permitted groundwater rights are less than the estimated average annual recharge.

Upgradient: In relation to any fixed point with regard to the direction of drainage or flow, upgradient is at a higher point of elevation than the chosen observation point and thus upward in relation to the direction of flow.

Waste Rock: A non-ore rock that is removed to access the ore zone. It contains target metal(s) or mineral(s) below the economic cutoff level, and must be removed to gain access to the ore zone.

Waste Rock Disposal Area (WRDA): also called waste rock storage facility or stockpile area; an area where waste rock (loose or consolidated rock material that overlies a mineral deposit) is placed during mining either temporarily or permanently.

Watershed: The entire land area that contributes water to a particular drainage system or stream.

Wilderness: Wilderness is designated by Congress under the authority of the Wilderness Act of 1964 and comprise the National Wilderness Preservation System.

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Appendix 1A

Project Consistency with Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment

APPENDIX 1A

Project Consistency with Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment

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CHAPTER 1 INTRODUCTION

The 2015 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment, referred to herein as the Greater Sage-Grouse Land Use Plan Amendment (GRSG LUPA), provides guidance on measures to avoid and minimize potential impacts resulting from proposed projects and addresses measures to compensate for unavoidable impacts to Greater Sage-Grouse habitat resulting from development projects.

The proponent of the Gold Rock Mine Project submitted a Plan of Operations (Plan, Midway 2013) to the BLM, in compliance with the BLM's surface management regulations defined in Code of Federal Regulations Title 43 Subpart 3809 (43 CFR Subpart 3809). The Plan described the Gold Rock Mine Project, which would include re-opening of an existing mine, exploration, construction, operation, reclamation, and closure activities within a defined area. The proponent incorporated several best management practices (BMPs) identified in *A Report on National Greater Sage-Grouse Conservation Measures* (Sage-Grouse National Technical Team 2011) into its proposed project design features and its applicant-committed environmental protection measures (Applicant-Committed EPMs). These BMPs were later incorporated in the GRSG LUPA as management decisions (MDs) and required design features (RDFs). Upon approval of a Plan, the proponent would comply with the terms and conditions of the Plan and other federal and state laws related to environmental protection and protection of cultural resources, and to meet the six general and 13 specific performance standards identified in Subpart 3809.420.

Under 43 CFR 3809 the BLM's decision is a non-discretionary agency action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. Given that, the proponent is not subject to MDs or RDFs in the GRSG LUPA. However, the BLM received a commitment from the proponent to incorporate many MDs and RDFs as Applicant-Committed EPMs (FEIS Table 2.3-8) to avoid or minimize direct and indirect impacts to Greater Sage-Grouse and to PHMA and GHMA.

The BLM identified other action alternatives that would minimize impacts to Greater Sage-Grouse and analyzed potential impacts related to those alternatives and the No Action Alternative. The BLM identified direct and indirect impacts to Greater Sage-Grouse and its habitat. The BLM also identified mitigation measures to further avoid or minimize direct and indirect impacts to Greater Sage-Grouse (mitigation measures W-4 through W-6, FEIS Section 4.9.12) and PHMA and GHMA (mitigation measures W-7 and W-8, FEIS Section 4.9.12).

In addition, the BLM coordinated with the Nevada Department of Wildlife (NDOW), the Nevada Department of Conservation of Natural Resources Sagebrush Ecosystem Technical Team (SETT), and the proponent. The proponent voluntarily agreed to conduct compensatory mitigation to offset residual (long-term unreclaimed) direct surface disturbance impacts to Greater Sage-Grouse habitat (mitigation measure W-9, FEIS Section 4.9.12). Consistent with applicable laws and regulations, compensatory mitigation was not conducted for residual indirect impacts.

A summary of the Gold Rock Mine Project Proposed Action and Applicant-Committed EPMs is presented in Section 2.3 of the Final Environmental Impact Statement for the Gold Rock Mine Project (FEIS). Other alternatives, including the BLM Preferred Alternative (a combination of elements of four alternatives), are described in FEIS Section 2.4. Impacts to Greater Sage-Grouse associated with the Proposed Action and alternatives are described in FEIS Sections 4.9.3 through 4.9.11. Additional monitoring and mitigation measures for Greater Sage-Grouse are described in FEIS Section 4.9.12, including but not limited to voluntary offset mitigation for residual direct surface disturbance impacts to Greater Sage-Grouse habitat management areas.

The environmental impact analysis conducted in the FEIS indicated that under all of the action alternatives, including the BLM Preferred Alternative, impacts to Greater Sage-Grouse habitat would be avoided and minimized to the extent practicable.

Under the Preferred Alternative, 419 acres of long-term surface disturbance would not be reclaimed, compared to 458 acres under the Proposed Action (Table 2.4-1 of the FEIS). Long-term surface disturbance that would not be reclaimed would include the 334-acre pit expansion, one 13-acre process pond converted to an evapotranspiration cell, 44 acres of stormwater control facilities and sediment basins, and 28 acres of disturbance associated with the proposed county road re-route construction and widening if White Pine County decides to upgrade the road.

The 334 acres disturbed during expansion of the pit would be permanently lost, as bare rock would be exposed. The remaining 85 acres that would not be reclaimed would revegetate through natural processes. Sediment basins would remain in place to promote the potential post-mining land uses such as livestock grazing and wildlife use. The majority of the run-on diversion structures would also remain in place. The run-on diversion above the TSF and heap would be left in place and would continue to divert flow from the 100-year, 24-hour storm event around the reclaimed heap and process solution ponds.

Overlaying the Preferred Alternative's 419 acres of long-term unreclaimed disturbance with 2014 USGS mapping (2014f), long-term unreclaimed disturbance would occur on 268 acres of PHMA and 109 acres of GHMA (Table 4.9-5 and Table 4.9-9 in the FEIS). This long-term unreclaimed disturbance represents residual direct surface disturbance impacts in Greater Sage-Grouse habitat management areas, for which the proponent has committed to conduct voluntary offset mitigation (Chapter 1A 6 in this appendix).

Implementation of any of the action alternatives in conjunction with mitigation measures is not anticipated to result in unnecessary or undue degradation. The Proposed Action and other alternatives would be consistent with the Ely District Record of Decision and Approved Resource Management Plan (BLM 2008, as amended), as required by regulation (43 CFR 1610.5-3(a)), and mitigation measures would be consistent with the GRSG LUPA.

The BLM's Preferred Alternative is based on the agency's NEPA analysis of the project, including comments received throughout the NEPA process. The decision is to select the Preferred Alternative, along with the Applicant-Committed EPMs included in the Plan, and the mitigation measures specified in Chapter 4. This appendix documents the Applicant-Committed EPMs applicable to Greater Sage-Grouse (noted in Tables 1A-1 through 1A-8 below) and mitigation measures (described in sections 1A 6 and 1A 7).

The Preferred Alternative is the alternative that best fulfills the agency's statutory mission and responsibilities, considering economic, environmental, technical, and other factors. The Preferred Alternative with the identified monitoring and mitigation measures would not cause unnecessary or undue degradation of the public lands.

The BLM has compiled Tables 1A-1 through 1A-8 below to summarize those elements of the proposed project that are consistent with an MD or RDF, whether the MD or RDF is applicable to the proposed project or not.

Sections 1A 2 through 1A 7 provide additional information on the consistency of the Gold Rock Mine Project Proposed Action and other action alternatives with the requirements of the September 2015 GRSG LUPA.

Table 1A-1 **Relevant Management Decisions for Special Status Species**

MD #	MD Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
SSS 1	In PHMAs and GHMAs, work with the proponent/applicant, whether in accordance with a valid existing right or not, and use the following screening criteria to avoid effects of the proposed human activity on GRSG habitat: A. First priority—locate project/activity outside PHMAs and GHMAs B. Second priority—if the project/activity cannot be placed outside PHMAs and GHMAs, locate the surface-disturbing activities in non-habitat areas first, then in the least suitable habitat for GRSG C. Third priority—co-locate the project/activity next to or in the footprint of existing infrastructure	Yes	Ore bodies are in place and not flexible in terms of location. Midway has proposed to co-locate the Gold Rock Mine Project facilities with closed Easy Junior facilities to minimize impacts on Greater Sage-Grouse habitat and to consolidate its proposed facilities around ore bodies to increase feasibility and lower material handling costs (FEIS Section 2.3 Proposed Action). Midway has worked with the BLM to avoid effects of human activity on Greater Sage-Grouse habitat. Evidence of the effort to avoid and minimize impacts is demonstrated in the acreage of impacts displayed in FEIS Table 4.9-5. Under the Preferred Alternative, areas of PHMA that would be impacted have been reduced by approximately 36 percent in comparison to the Proposed Action. Areas of GHMA that would be impacted have been increased by approximately3 percent in comparison to the Proposed Action. To minimize direct and indirect impacts to PHMA, the BLM identified power line route alternatives (FEIS Section 2.4.1 Power Line Route Alternatives) and the Northwest Main Access Route alternatives (Northern Power Line and Southern Power Line) (FEIS Section 2.4.2 Vehicular Route Alternatives). The BLM identified the Western Tailings Storage Facility Alternative to locate the TSF in GHMA and OHMA, rather than in PHMA and GHMA under the Proposed Action, avoiding and minimizing direct and indirect impacts in PHMA (FEIS Section 2.4.3 Western Tailings Storage Facility Alternative). To minimize residual (long-term unreclaimed) impacts to PHMA under all action alternatives, the BLM identified mitigation measures regarding the distribution power line from the mine to the existing Easy Junior water supply well. If burial of the distribution line is not technically feasible, the line would be installed above ground, the power line route would be sited to minimize disturbance in or avoid Greater Sage-Grouse PHMA and GHMA and would use APLIC avian deterring design measures (APLIC 2006, APLIC 2012), BMPs (APLIC 2015), or best available technology. (FEIS Section 4.9.12 Additional Monitoring and Mitigation, Mitigation, Special Status Wildlife – Greater Sage-Grouse). In developing the Northwest Main Access Route Alternative, Northern Power Line Route and the Northwest Main Access Route Alternative, Southern Power Line Route, the BLM co-located route segments with the existing Pan Southwest Power Line maintenance road and existing BLM roads to minimize indirect impacts to PHMA and GHMA (FEIS Section 2.4.2 Vehicular Route Alternatives). The BLM co-located the Modified County Road Re-Route Alternative with an existing road to avoid direct and indirect impact to GHMA (FEIS Section 2.4.2 Vehicular Route Alternatives).
SSS 2 (PHMA)			
SSS 2A (PHMA)	Manage discrete anthropogenic disturbances, whether temporary or permanent, so they cover less than 3 percent of 1) biologically significant units (BSUs; total PHMA area associated with a GRSG population area (see GRSG LUPA Appendix A, Figure 2-2)) and 2) in a proposed project analysis area. See GRSG LUPA Appendix E (Disturbance Cap Guidance) for additional information on implementing the disturbance cap, including what is and is not considered disturbance and how to calculate the proposed project analysis area, as follows: 1. If the 3 percent human disturbance cap is exceeded on all lands (regardless of ownership) in PHMAs in any given BSU, then no further discrete human disturbances (subject to applicable laws and regulations, such as the 1872 Mining Law, as amended, and valid existing rights) will be permitted, by BLM within GRSG PHMA in any given BSU until the disturbance has been reduced to less than the cap (see Nevada exception under MD SSS 2 a. 3. Appendix E in GRSG LUPA). 2. If the 3 percent disturbance cap is exceeded on all lands (regardless of land ownership) within a proposed project analysis area in a PHMA, then no further anthropogenic disturbance will be permitted by BLM until disturbance in the proposed project analysis area has been reduced to maintain the area under the cap (subject to applicable laws and regulations, such as the 1872 Mining Law, as amended, valid existing rights; see Nevada exception under MD SSS 2 a. 3. in Appendix E in GRSG LUPA).	Yes[1]	GRSG LUPA Appendix E directs that the disturbance cap analysis should be conducted and results provided in NEPA analyses, but any exceedances of the cap (at both the BSU and project levels scales) do not preclude a locatable mineral resources project with existing valid rights from BLM approval. The BSU disturbance is calculated once a year at the BLM National Operations Center. The affected BSU for this project is the Butte/Buck/White Pine BSU. In 2016, approximately 0.61 percent of PHMA within the Butte/Buck/White Pine BSU was disturbed by cumulative actions (Magaletti 2017). BLM Nevada State Office has conducted project scale calculations for the Proposed Action and action alternatives. Results of the project-scale disturbance calculations for the Preferred Alternative yields a 1.25 percent disturbance. See Section 1A 2 of this appendix.

Table 1A-1 Relevant Management Decisions for Special Status Species

MD #	MD Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
SSS 2B (PHMA)	In PHMA, in undertaking BLM management actions, and consistent with valid existing rights and applicable law, in authorizing third-party actions that result in habitat loss and degradation, the BLM will require and ensure mitigation that provides a net conservation gain to the species, including accounting for any uncertainty associated with the effectiveness of such mitigation. The project/activity with associated mitigation (such as the use of the State of Nevada Conservation Credit System) will result in an overall net conservation gain to GRSG (see Appendix F of GRSG LUPA).	NA	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA. Under all of the Gold Rock Mine Project action alternatives, including the BLM Preferred Alternative, impacts to Greater Sage-Grouse habitat have been avoided and minimized to the extent practicable. The BLM and the proponent identified and considered two voluntary off-site mitigation options to offset residual (long-term unreclaimed) direct surface disturbance impacts to Greater Sage-Grouse habitat: • Use of the CCS (Section 1A.6.1), and • Funding of the implementation and monitoring of other proposed off-site habitat restoration projects on federal lands nearby that have already undergone NEPA analysis, at a ratio of 3 acres of restoration per 1 acre of residual direct surface disturbance (3:1) in PHMA and 2 acres of restoration for each 1 acre of disturbance (2:1) in GHMA (Section 1A.6.2). Both offset mitigation options (use of the CCS and funding of other off-site restoration projects) are analyzed in the FEIS. The CCS tools would be applied to the selected mitigation option, where feasible, to provide additional information. Implementation of either offset mitigation option would provide habitat improvements in PHMA and in GHMA, consistent with applicable laws and regulations. The mitigation measures outlined in Section 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA. By avoiding and minimizing direct surface disturbance impacts through implementation of Applicant-Committed EPMs and application of on-site mitigation measures, and by offsetting residual (long-term unreclaimed) direct surface disturbance impacts through off-site mitigation, this project would achieve a net conservation gain. Use of the CCS would result in net benefit for Greater Sage-Grouse by calculating a number of functional acres lost and applying a mitigation ratio and a proximity ratio to determine the credit obligation. The CCS would ensure net benefit and limitation of overall risk through development of a participant contract and accompanying project-specific management plan. Its management plan would define habitat performance standards and annual biological monitoring and reporting requirements (SEP 2016b). Funding of other off-site restoration projects would result in a net conservation gain because mitigation for residual direct surface disturbance impacts would involve 3 acres of restoration for every 1 acre of disturbance (3:1) in PHMA and 2 acres of restoration for every 1 acre of disturbance (2:1) in GHMA. Restoration treatment areas would be selected in designated seasonal habitat(s) to benefit nearby Greater Sage-Grouse populations that may be affected by project activities. These selected areas would be rated using the BLM Habitat Assessment Framework (HAF) habitat suitability categories, then treated, monitored, and rated to show that these habitat restoration treatments had improved habitat suitability.
SSS 2C (PHMA)	Authorized/permitted activities are implemented by adhering to the RDFs described in Appendix C (of GRSG LUPA), consistent with applicable law. At the site-specific scale, if an RDF is not implemented, at least one of the following must be demonstrated in the NEPA analysis associated with the project/activity: 1. A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g., due to the site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable. 2. An alternative RDF is determined to provide equal or better protection for GRSG or its habitat. 3. A specific RDF will provide no additional protection to GRSG or its habitat.	Yes	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA, as noted in Tables 1A-1 through 1A-8 of this appendix. The mitigation measures outlined in Sections 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA. Under the Preferred Alternative, the Gold Rock Mine Project would be consistent with several RDFs as presented in Tables 1A-6, 1A-7 and 1A-8 below through the voluntary application of the Applicant-Committed EPMs presented in FEIS Table 2.3-8.
SSS 2D (PHMA)	In management actions, and consistent with valid and existing rights and applicable law in authorizing third-party actions, the BLM will apply the lek buffer-distances identified in the USGS report, Conservation Buffer Distance Estimates for Greater Sage-Grouse—A Review Open File-Report 2014-1239 (Manier et al. 2014), in accordance with Appendix B, Applying Lek Buffer-Distances When Approving Actions, in GRSG LUPA.	NA	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA. The mitigation measures outlined in Sections 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA. The Gold Rock Mine Project holds valid existing rights and therefore is not subject to lek buffer distances identified in Appendix B of the GRSG LUPA.

Table 1A-1 **Relevant Management Decisions for Special Status Species**

MD #	MD Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
SSS 2E (PHMA)	Seasonal restrictions will be applied during the period specified below to manage discretionary surface-disturbing activities and uses on public lands to prevent disturbances to GRSG during seasonal life-cycle periods: 1. In breeding habitat within 4 miles of active and pending GRSG leks from March 1 through June 30 a Lek—March 1 to May 15 b Lek hourly restrictions—6 p.m. to 9 a.m. c Nesting—April 1 to June 30 2. Brood-rearing habitat from May 15 to September 15 a Early—May 15 to June 15 b Late—June 15 to September 15 3. Winter habitat from November 1 to February 28 The seasonal dates may be modified due to documented local variations (e.g., higher/lower elevations) or annual climatic fluctuations (e.g., early/late spring, long/heavy winter), in coordination with NDOW, in order to better protect GRSG and its habitat.	NA	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA. The mitigation measures outlined in Section 1A 6 (Voluntary Offset Mitigation) and Section 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA. The Gold Rock Mine Project holds valid existing rights and therefore is not subject to the application of seasonal restrictions identified in the GRSG LUPA. Best available site-specific science indicates that surface disturbance that would not be reclaimed would occur in areas mapped as GHMA and OHMA.
SSS 2F (PHMA)	Authorizations and permits will limit noise from discretionary activities (during construction, operation, and maintenance) to not exceed 10 decibels[2] above ambient sound levels at least 0.25 mile from active and pending leks, from 2 hours before to 2 hours after sunrise and sunset during the breeding season. See Appendix M, Greater Sage-Grouse Noise Protocol, in the GRSG LUPA.	NA	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. Given that, the proponent is not subject to MDs or RDFs in the GRSG LUPA. Under all action alternatives, no surface disturbance or mining activity would occur within 0.25 mile of a known lek (FEIS Table 4.9-3). However, to mitigate possible noise impacts to Greater Sage-Grouse due to project-related traffic on the selected main access route, EIS Mitigation Measures W-4 and W-5 (Section 1A 7) would involve noise monitoring at nearby active leks from March 1 through May 15 from one hour before sunrise until three hours after sunrise, consistent with existing Pan Mine noise monitoring (BLM 2013). Under Mitigation Measure W-4, noise monitoring would be conducted at the active Seligman Canyon lek, which is located within 0.25 mile of the existing main access route. Under Mitigation Measure W-5, noise monitoring would be conducted at the active Southwest Pancake Summit and East Black Point leks (in conjunction with Pan Mine noise monitoring). Both leks are located more than 0.25 mile from the alternative main access route. The Mitigation measures outlined in Sections 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA.
SSS 3 (GHMA)			
SSS 3A (GHMA)	In GHMAs, in undertaking BLM management actions, and consistent with valid existing rights and applicable law, in authorizing third-party actions that result in habitat loss and degradation, the BLM will require and ensure mitigation that provides a net conservation gain to the species, including accounting for any uncertainty associated with the effectiveness of such mitigation. The project/activity with associated mitigation (such as the use of the State of Nevada Conservation Credit System) in GHMAs will result in an overall net conservation gain to GRSG (see Appendix F, Regional Mitigation Strategy in GRSG LUPA).	NA	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA. Under all of the Gold Rock Mine Project action alternatives, including the BLM Preferred Alternative, impacts to Greater Sage-Grouse habitat have been avoided and minimized to the extent practicable. The BLM and the proponent identified and considered two voluntary off-site mitigation options to offset residual (long-term unreclaimed) direct surface disturbance impacts to Greater Sage-Grouse habitat: • Use of the CCS (Section 1A.6.1), and • Funding of the implementation and monitoring of other proposed off-site habitat restoration projects on federal lands nearby that have already undergone NEPA analysis, at a ratio of 3 acres of restoration per 1 acre of residual direct surface disturbance (3:1) in PHMA and 2 acres of restoration for each 1 acre of disturbance (2:1) in GHMA (Section 1A.6.2). Both compensatory mitigation options (use of the CCS and funding of other off-site restoration projects) are analyzed in the FEIS. The CCS tools would be applied to the selected mitigation option, if feasible, to provide additional information. Implementation of either offset mitigation option would provide habitat improvements in PHMA and in GHMA, consistent with applicable laws and regulations. The mitigation measures outlined in Section 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA. By avoiding and minimizing direct surface disturbance impacts through implementation of Applicant-Committed EPMs and application of on-site mitigation measures, and by offsetting residual (long-term unreclaimed) direct surface disturbance impacts through off-site mitigation, this project would achieve a net conservation gain.

Table 1A-1 Relevant Management Decisions for Special Status Species

MD #	MD Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
			Use of the CCS would result in net benefit for Greater Sage-Grouse by calculating a number of functional acres lost and applying a mitigation ratio and a proximity ratio to determine the credit obligation. The CCS would ensure net benefit and limitation of overall risk through development of a participant contract and accompanying project-specific management plan. Its management plan would define habitat performance standards and annual biological monitoring and reporting requirements (SEP 2016b). Funding of other off-site restoration projects would result in a net conservation gain because mitigation for residual direct surface disturbance impacts would involve 3 acres of restoration for every 1 acre of disturbance (3:1) in PHMA and 2 acres of restoration for every 1 acre of disturbance (2:1) in GHMA. Restoration treatment areas would be selected in designated seasonal habitat(s) to benefit nearby Greater Sage-Grouse populations that may be affected by project activities. These selected areas would be rated using the BLM Habitat Assessment Framework (HAF) habitat suitability categories, then treated, monitored, and rated to show that these habitat restoration treatments had improved habitat suitability.
SSS 3B (GHMA)	Authorized/permitted activities are implemented adhering to the RDFs described in Appendix C (of the GRSG LUPA), consistent with applicable law. At the site-specific scale, if an RDF is not implemented, at least one of the following must be demonstrated in the NEPA analysis associated with the project/activity: 1. A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g., due to the site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable. 2. An alternative RDF is determined to provide equal or better protection for GRSG or its habitat. 3. A specific RDF will provide no additional protection to GRSG or its habitat.	Yes	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA, as noted in Tables 1A-1 through 1A-8 of this appendix. The mitigation measures outlined in Sections 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA. Under the Preferred Alternative, the Gold Rock Mine Project would be consistent with several RDFs as presented in Table 1A-6, 1A-7 and Table 1A-8 below through the application of the Applicant-Committed EPMs presented in FEIS Table 2.3-8.
SSS 3C (GHMA)	In undertaking BLM management actions, and consistent with valid and existing rights and applicable law in authorizing third-party actions, the BLM will apply the lek buffer-distances identified in the USGS report, Conservation Buffer Distance Estimates for Greater Sage-Grouse—A Review Open File Report 2014-1239 (Manier et.al 2014]), in accordance with Appendix B, Applying Lek Buffer-Distances When Approving Actions, in GRSG LUPA.	NA	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA. The mitigation measures outlined in Sections 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA.
SSS 3D (GHMA)	Seasonal restrictions will be applied during the period specified below to manage discretionary surface-disturbing activities and uses on public lands to prevent disturbing GRSG during seasonal life cycle periods, as follows: 1. In breeding habitat within 4 miles of active and pending GRSG leks from March 1 through June 30 a Lek—March 1 to May 15 b Lek hourly restrictions—6 p.m. to 9 a.m. c Nesting—April 1 to June 30 2. Brood-rearing habitat from May 15 to September 15 a Early—May 15 to June 15 b Late—June 15 to September 15 3. Winter habitat from November 1 to February 28 The seasonal dates may be modified due to documented local variations (e.g., higher/lower elevations) or annual climatic fluctuations (e.g., early/late spring, long/heavy winter), in coordination with NDOW, in order to better protect GRSG and its habitat.	NA	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA. The mitigation measures outlined in Sections 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA. The Gold Rock Mine Project holds valid existing rights and therefore is not subject to the application of seasonal restrictions identified in the GRSG LUPA. Based on USGS August 2014 Greater Sage-Grouse mapping per the GRSG LUPA (BLM 2015), surface disturbance that would not be reclaimed would occur in areas mapped as PHMA and GHMA.
SSS 3E (GHMA)	Authorizations and permits will limit noise from discretionary activities (during construction, operation, and maintenance) to not exceed 10 decibels[2] above ambient sound levels at least 0.25 mile from active and pending leks, from 2 hours before to 2 hours after sunrise and sunset during the breeding season. See Appendix M, Greater Sage-Grouse Noise Protocol, in GRSG LUPA.	NA	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. Under all action alternatives, no surface disturbance or mining activities would occur within 0.25 mile of a known lek (FEIS Table 4.9-3). However, to mitigate possible noise impacts due to project-related traffic on proposed main access routes, EIS Mitigation Measures W-4 and W-5 (Section 1A 7) would involve noise monitoring at active leks from March 1 through May 15 from one hour before sunrise until three hours after sunrise, consistent with existing Pan Mine noise monitoring (BLM 2013). Under Mitigation Measure W-4, noise monitoring would be conducted at the active Seligman Canyon lek, which is located within 0.25 mile of the existing main access route. Under Mitigation Measure W-5, noise monitoring would be conducted at the active Southwest Pancake Summit and East Black Point leks (in conjunction with Pan Mine noise monitoring), both of which are located more than 0.25 mile from the alternative main access route. The mitigation measures outlined in Sections 1A 6 (Voluntary Offset Mitigation) and 1A 7 Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA.

Table 1A-1 **Relevant Management Decisions for Special Status Species**

MD #	MD Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
SSS 4 (OHMA)	In OHMAs, authorized/permitted activities are implemented adhering to the RDFs described in Appendix C of GRSG LUPA, consistent with applicable law. At the site-specific scale, if an RDF is not implemented, at least one of the following must be demonstrated in the NEPA analysis associated with the project/activity: 1. A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g., due to the site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable. 2. An alternative RDF is determined to provide equal or better protection for GRSG or its habitat. 3. A specific RDF will provide no additional protection to GRSG or its habitat.	NA	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA. The mitigation measures outlined in Sections 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA. Under the Preferred Alternative, the Gold Rock Mine Project would be consistent with several RDFs as presented in Table 1A-6, 1A-7 and Table 1A-8 below due to the application of the Applicant-Committed EPMs presented in FEIS Table 2.3-8.
SSS 8	As determined by BLM in coordination with NDOW or CDFW, for any surface-disturbing activities involving mineral activities (to the extent possible under existing law) and rights-of-way actions proposed in PHMAs and GHMAs, the proponent will use the services of a qualified biologist approved by the BLM to conduct surveys for GRSG breeding activity during the GRSG breeding season before project activities begin. The surveys must encompass all suitable GRSG habitats within a minimum of 4 miles of the proposed activities. Surveys will be conducted following protocols established by state fish and wildlife agencies during planning operations and during project activities. GRSG seasonal habitat delineations will also be required within a minimum of 4 miles of project activities.	NA	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA. The mitigation measures outlined in Sections 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA. NDOW conducts annual breeding season lek surveys in the region. In addition, Midway is supporting five years of studies on Greater Sage-Grouse movement in the project region being conducted by Dr. Peter Coates of the U.S. Geological Survey. The studies began in 2013 and are scheduled to end in 2017. These studies cover leks in the region and Greater Sage-Grouse use of habitats within 4 miles of the proposed project activities. Information from the studies is summarized in FEIS Section 3.9 Wildlife Resources, Including Migratory Birds and Special Status Animals. Under all action alternatives, Midway's Applicant-Committed EPMs include conducting wildlife-related studies, including but not limited to migratory bird nest surveys and eagle nest surveys as appropriate, through the mine life.
SSS 9a	In Nevada only, the BLM will consult with the Sagebrush Ecosystem Technical Team (SETT) for application of the "avoid, minimize, and compensate" mitigation strategy and the Conservation Credit System developed by the Nevada Natural Heritage Program and the SETT (SETT 2014a,b) or other applicable mitigation system such as outlined in Appendix I of the GRSG LUPA. This will be to ensure that a net conservation gain of GRSG habitat is achieved in mitigating human disturbances in PHMAs and GHMAs (see Appendix F of the GRSG LUPA) on all agency-authorized activities. The specifics of the coordination will be identified in an MOU between the agencies. [Note: Citations for "SETT 2014a,b" were not included in Chapter 6 References in GRSG LUPA; however, a citation for "Nevada Natural Heritage Program and the Sagebrush Ecosystem Technical Team 2014" was included in Chapter 6 References in GRSG LUPA and is included in Section 8 of this appendix.]	NA	The Gold Rock Mine Project is a non-discretionary 43 CFR 3809 action and BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA. Under all of the Gold Rock Mine Project action alternatives, including the BLM Preferred Alternative, impacts to Greater Sage-Grouse habitat have been avoided and minimized to the extent practicable. The BLM and the proponent identified and considered two voluntary off-site mitigation options to offset residual (long-term unreclaimed) direct surface disturbance impacts to Greater Sage-Grouse habitat: • Use of the CCS (Section 1A.6.1), and • Funding of the implementation and monitoring of other proposed off-site habitat restoration projects on federal lands nearby that have already undergone NEPA analysis, at a ratio of 3 acres of restoration per 1 acre of residual direct surface disturbance (3:1) in PHMA and 2 acres of restoration for each 1 acre of disturbance (2:1) in GHMA (Section 1A.6.2). Both compensatory mitigation options (use of the CCS and funding of other off-site restoration projects) are analyzed in the FEIS. The CCS tools would be applied to the selected mitigation option, if feasible, to provide additional information. Implementation of either offset mitigation option would provide habitat improvements in PHMA and in GHMA, consistent with applicable laws and regulations. The mitigation measures outlined in Section 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA. By avoiding and minimizing direct surface disturbance impacts through implementation of Applicant-Committed EPMs and application of on-site mitigation measures, and by offsetting residual (long-term unreclaimed) direct surface disturbance impacts through off-site mitigation, this project would achieve a net conservation gain. Use of the CCS would result in net benefit for Greater Sage-Grouse by calculating a number of functional acres lost and applying a mitigation ratio and a proximity ratio to determine the credit obligation. The CCS would ensure net benefit and limitation of overall risk through development of a participant contract and accompanying project-specific management plan. Its management plan would define habitat performance standards and annual biological monitoring and reporting requirements (SEP 2016b). Funding of other off-site restoration projects would result in a net conservation gain because mitigation for residual direct surface disturbance impacts would involve 3 acres of restoration for every 1 acre of disturbance (3:1) in PHMA and 2 acres of restoration for every 1 acre of disturbance (2:1) in GHMA. Restoration treatment areas would be selected in designated seasonal habitat(s) to benefit nearby Greater Sage-Grouse populations that may be affected

Table 1A-1 Relevant Management Decisions for Special Status Species

MD #	MD Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
			by project activities. These selected areas would be rated using the BLM Habitat Assessment Framework (HAF) habitat suitability categories, then treat monitored, and rated to show that these habitat restoration treatments had improved habitat suitability.
SSS 11	Design and construct fences consistent with BLM H-1741-1, Fencing Standards Manual (BLM 1990[12-6-1989]), and apply the Sage-Grouse Fence Collision Risk Tool to Reduce Bird Strikes (NRCS 2012). Bring existing fencing into compliance as opportunities arise.	Yes	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. Midway committed to install NDOW-approved wildlife friendly fence, citing the BLM handbook H-1741-1, Fencing Standards Manual (BLM 1989) (FE Section 2.3.12) and to mark fences per NRCS 2012 Risk Tool guidance, similar to fencing practices used at the Pan Mine (FEIS Table 2.3-8).
SSS 13	Require authorizations to include stipulations and RDFs consistent with applicable law to reduce or eliminate opportunities to attract and provide nesting, cover, or perches for predators in PHMAs and GHMAs.	NA	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. T proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporate elements consistent with several MDs and RDFs from the GRSG LUPA. The mitigation measures outlined in Sections 1A 6 (Voluntary Offset Mitigatio and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRS LUPA. Midway Migratory Bird Applicant-Committed EPMs (FEIS Table 2.3-8) include and are not limited to: ▪ Use APLIC avian deterring design measures (APLIC 2006, APLIC 2012), APLIC BMPs for electric utilities in Greater Sage-Grouse habitat (APL 2015), or best available technology. Midway Special Status Species Applicant-Committed EPMs (FEIS Table 2.3-8) include and are not limited to: ▪ Within 1,968 feet (600 meters) of PHMA and GHMA, implement line strike diverters and perch deterrents on all power line alternatives. Under all action alternatives, the proposed mitigation measure for Greater Sage-Grouse if a proposed second well is required would involve burial of th distribution power line to that well if feasible based on soil conditions and other technical aspects, avoiding creation of perches for predators in PHMA o GHMA (FEIS Section 4.9.12 Additional Monitoring and Mitigation). Under all action alternatives, the proposed mitigation measure of creating artificial nesting platforms for ferruginous hawks would be applied, if practicable only outside of PHMA and GHMA to avoid creation of perches for predators in PHMA or GHMA (FEIS Section 4.9.12 Additional Monitoring and Mitigation
SSS 15	Reduce and eliminate artificial hunting perches and nesting surfaces for aerial predators (e.g., remove fences, nonworking fences, and power lines and install anti-perch devices on existing and new power lines).	Yes	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. Safety and security fencing installed during construction and operation of the closed Easy Junior mine remain in place. No other fences and no power line are present within the Plan area. In the region, the existing Pan Southwest Power Line includes anti-perch devices. Under all action alternatives, Midway committed to minimize impacts to Greater Sage-Grouse due to predation by applying APLIC or best available technology to deter perching on power lines (FEIS Table 2.3-8), and to remove facilities during mine closure (FEIS Section 2.3.16 Reclamation Plan).
SSS 22	As determined by BLM in coordination with NDOW, for any surface-disturbing activities involving mineral activities and rights-of-way actions (with the possible exception of short duration activities outside of seasonal GRSG habitats) BLM will require that active and pending leks be monitored annually within 4 miles of disturbance until the use terminates and all disturbances have been restored. The proponent will fund the services of an independent qualified biologist approved by the BLM, in coordination with NDOW or CDFW, consistent with applicable law.	NA	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporate elements consistent with several MDs and RDFs from the GRSG LUPA. The mitigation measures outlined in Sections 1A 6 (Voluntary Offset Mitigation and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA. NDOW conducts annual breeding season lek surveys in the region. In addition, Midway is supporting five years of studies on Greater Sage-Grouse movement in the project region being conducted by Dr. Peter Coates of the U.S. Geological Survey. The studies began in 2013 and are scheduled to end in 2017. These studies cover leks in the region and Greater Sage-Grouse use of habitats within 4 miles of the proposed project activities. Information from the studies is summarized in FEIS Section 3.9 Wildlife Resources, Including Migratory Birds and Special Status Animals.

Notes:
1 MD SSS 2A is considered applicable in that the results of the disturbance calculations are required to be disclosed in NEPA analyses. MD SSS 2A is not applicable to non-discretionary permit approvals with regards to the limitation of surface disturbance to 3 percent of PHMA within the BSU and project scales.
2 Decibels on the A-weighted scale

MD = Management Decision
SSS = Special Status Species
CCS = Nevada Credit Conservation System
EPM = Environmental Protection Measure
GRSG = Greater Sage-Grouse
GRSG LUPA = 2015 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (BLM 2015)
PHMA = Priority Habitat Management Area
GHMA =General Habitat Management Area
OHMA = Other Habitat Management Area
NA = Not applicable
NDOW = Nevada Department of Wildlife
BSU = Biologically Significant Unit

Table 1A-2 **Management Decisions for Mineral Resources, Locatable Minerals**

MD #	MD Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
MR 15	Review **Objective SSS 4** and apply **MDs SSS 1 through SSS 4** when reviewing and analyzing projects and activities proposed in GRSG habitat. (MDs SSS 1 through SSS 4 are addressed above in **Table 1A-1**).	Yes	**"Objective SSS 4**: In PHMAs and GHMAs, apply the concept of "avoid, minimize, and compensatory mitigation" for all human disturbance in areas not already excluded or closed, so as to avoid adverse effects on Greater Sage-Grouse and its habitat. The first priority will be to avoid new disturbance; where this is not feasible, the second priority will be to minimize and mitigate any new disturbance (GRSG LUPA, Appendices F and I)." (BLM 2015). The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA. Under all of the Gold Rock Mine Project action alternatives, including the BLM Preferred Alternative, impacts to Greater Sage-Grouse habitat have been avoided and minimized to the extent practicable. The BLM and the proponent identified and considered two voluntary off-site mitigation options to offset residual (long-term unreclaimed) direct surface disturbance impacts to Greater Sage-Grouse habitat: • Use of the CCS (Section 1A.6.1), and • Funding of the implementation and monitoring of other proposed off-site habitat restoration projects on federal lands nearby that have already undergone NEPA analysis, at a ratio of 3 acres of restoration per 1 acre of residual direct surface disturbance (3:1) in PHMA and 2 acres of restoration for each 1 acre of disturbance (2:1) in GHMA (Section 1A.6.2). Both compensatory mitigation options (use of the CCS and funding of other off-site restoration projects) are analyzed in the FEIS. The CCS tools would be applied to the selected mitigation option, if feasible, to provide additional information. Implementation of either offset mitigation option would provide habitat improvements in PHMA and in GHMA, consistent with applicable laws and regulations. The mitigation measures outlined in Section 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA. By avoiding and minimizing direct surface disturbance impacts through implementation of Applicant-Committed EPMs and application of on-site mitigation measures, and by offsetting residual (long-term unreclaimed) direct surface disturbance impacts through off-site mitigation, this project would achieve a net conservation gain. Use of the CCS would result in net benefit for Greater Sage-Grouse by calculating a number of functional acres lost and applying a mitigation ratio and a proximity ratio to determine the credit obligation. The CCS would ensure net benefit and limitation of overall risk through development of a participant contract and accompanying project-specific management plan. Its management plan would define habitat performance standards and annual biological monitoring and reporting requirements (SEP 2016b). Funding of other off-site restoration projects would result in a net conservation gain because mitigation for residual direct surface disturbance impacts would involve 3 acres of restoration for every 1 acre of disturbance (3:1) in PHMA and 2 acres of restoration for every 1 acre of disturbance (2:1) in GHMA. Restoration treatment areas would be selected in designated seasonal habitat(s) to benefit nearby Greater Sage-Grouse populations that may be affected by project activities. These selected areas would be rated using the BLM Habitat Assessment Framework (HAF) habitat suitability categories, then treated, monitored, and rated to show that these habitat restoration treatments had improved habitat suitability.
MR 16	Recommend for withdrawal SFA under the General Mining Act of 1872, as amended, subject to valid existing rights (see GRSG LUPA Appendix A, Figures 2-1 and 2-4).	NA	No Sagebrush Focal Areas are located within the proposed project area.
MR 17	On public lands, manage disturbances associated with notice-level activity in GRSG habitat on a landscape basis to avoid segmenting a project. Do this by encouraging operators and claimants to consolidate exploration into a plan of operations to reduce the proliferation of mining notices, in accordance with 43 CFR, Part 3809.21(b).	Yes	Midway has consolidated the exploration plan under the Plan. Midway submitted Plans of Operations for Exploration in 2011 and 2012. The BLM completed Environmental Assessments for each Plan of Operations and in 2012 issued a Finding of No Significant Impact for each NEPA document. This information is included within FEIS Section 1.2 Project History. FEIS Section 2.3 Proposed Action states: Midway proposes to perform exploration activities on a total of 467 acres in the Plan area, including the 267 acres previously authorized under the amended 2011 Plan (BLM 2012) and approximately 200 additional acres within the Plan area boundary.
MR 18	Subject to valid existing rights and applicable law, authorize locatable mineral development activity, by approving plans of operation and apply mitigation and best management practices that minimize the loss of PHMAs and GHMAs or that enhance GRSG habitat by applying the "avoid, minimize and compensatory mitigation" process through an applicable mitigation system, such as the Nevada Conservation Credit System.	Yes	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA. Under all of the Gold Rock Mine Project action alternatives, including the BLM Preferred Alternative, impacts to Greater Sage-Grouse habitat have been avoided and minimized to the extent practicable. The BLM and the proponent identified and considered two voluntary off-site mitigation options to offset residual (long-term unreclaimed) direct surface disturbance impacts to Greater Sage-Grouse habitat:

Table 1A-2 Management Decisions for Mineral Resources, Locatable Minerals

MD #	MD Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
			• Use of the CCS (Section 1A.6.1), and • Funding of the implementation and monitoring of other proposed off-site habitat restoration projects on federal lands nearby that have already undergone NEPA analysis, at a ratio of 3 acres of restoration per 1 acre of residual direct surface disturbance (3:1) in PHMA and 2 acres of restoration for each 1 acre of disturbance (2:1) in GHMA (Section 1A.6.2). Both compensatory mitigation options (use of the CCS and funding of other off-site restoration projects) are analyzed in the FEIS. The CCS tools would be applied to the selected mitigation option, if feasible, to provide additional information. Implementation of either offset mitigation option would provide habitat improvements in PHMA and in GHMA, consistent with applicable laws and regulations. The mitigation measures outlined in Section 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA. By avoiding and minimizing direct surface disturbance impacts through implementation of Applicant-Committed EPMs and application of on-site mitigation measures, and by offsetting residual (long-term unreclaimed) direct surface disturbance impacts through off-site mitigation, this project would achieve a net conservation gain. Use of the CCS would result in net benefit for Greater Sage-Grouse by calculating a number of functional acres lost and applying a mitigation ratio and a proximity ratio to determine the credit obligation. The CCS would ensure net benefit and limitation of overall risk through development of a participant contract and accompanying project-specific management plan. Its management plan would define habitat performance standards and annual biological monitoring and reporting requirements (SEP 2016b). Funding of other off-site restoration projects would result in a net conservation gain because mitigation for residual direct surface disturbance impacts would involve 3 acres of restoration for every 1 acre of disturbance (3:1) in PHMA and 2 acres of restoration for every 1 acre of disturbance (2:1) in GHMA. Restoration treatment areas would be selected in designated seasonal habitat(s) to benefit nearby Greater Sage-Grouse populations that may be affected by project activities. These selected areas would be rated using the BLM Habitat Assessment Framework (HAF) habitat suitability categories, then treated, monitored, and rated to show that these habitat restoration treatments had improved habitat suitability.
MR 19	Close or mitigate abandoned mine sites in PHMAs and GHMAs to reduce GRSG predation by eliminating physical structures that could provide nesting opportunities and perching sites for predators.	Yes	The closed Easy Junior Mine was partially reclaimed. Under all action alternatives, the proponent would reclaim the Easy Junior facilities with the exception of the pit.

Notes:
MD = Management Decision
MR = Mineral Resources
SSS = Special Status Species
CCS = Nevada Credit Conservation System
EPM = Environmental Protection Measure
GRSG = Greater Sage-Grouse
GRSG LUPA = 2015 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (BLM 2015)
PHMA = Priority Habitat Management Area
GHMA =General Habitat Management Area
OHMA = Other Habitat Management Area
NA = Not applicable

Table 1A-3 Relevant Management Decisions for Lands and Realty, Land Use Authorization

MD #	MD Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
LR 10	In PHMAs, bury new distribution power and communication lines in existing disturbed areas, unless it would not be technically feasible or the cost would prohibit the proponent from providing the service. Where burying transmission lines is not feasible, locate new transmission lines next to existing linear disturbances, when possible; additional mitigation will be required.	Yes	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA. The mitigation measures outlined in Sections 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA. The BLM considered burial of transmission power lines located outside the Plan area as an alternative and determined that the alternative was not technically feasible or environmentally reasonable and did not carry the alternative forward (FEIS Section 2.5.2 Agency-Developed Alternatives Eliminated From Detailed Analysis). Under all action alternatives, the distribution power line from the mine area to the existing Easy Junior well would be buried or would be located outside of PHMA and GHMA wherever feasible. A second water well may be installed within a 0.5-mile radius of the existing Easy Junior well (FEIS Section 2.3.1). If the second well is installed, Midway would bury the associated power line, if practicable, to minimize indirect impacts to Greater Sage-Grouse (FEIS Section 4.9.12 Additional Monitoring and Mitigation, and Section 1A 7, below).
LR 11	When renewing or amending ROWs (including permits and leases), assess the impacts of ongoing use of the ROW on GRSGs and their habitat and minimize such impacts to the extent allowed by law.	Yes	Under the Preferred Alternative and Northwest Main Access Route alternatives, the existing ROW for the Pan Southwest Power Line and associated maintenance road, along with existing ROWs for other BLM and County roads associated with this alternative would be amended to accommodate upgrading of the roads to handle commercial truck traffic (FEIS Section 2.4.2 Vehicular Route Alternatives). Impacts to resources from ongoing use of existing road ROWs and from the proposed road widening have been disclosed in FEIS Chapter 4 and mitigation measures to minimize impacts to Greater Sage-Grouse have been proposed (FEIS Section 4.9.12).
LR 14	Stipulate site relinquishment and reclamation in all new, amended or renewed ROWs, permits, and leases.	Yes	Under all action alternatives, Midway committed to remove mine facilities, including power line ROWs, and to reclaim the power line ROW (FEIS Section 2.3.16). Under the Northwest Main Access Route alternatives, a new connector road ROW would be established. Midway, the BLM and the County would determine the use of the road ROW following the end of mining (FEIS Section 2.4.2).
LR 15	In PHMAs and GHMAs, site new linear features in designated corridors, as identified in Appendix A, Figure 2-10 [of the GRSG LUPA (BLM 2015)], or at a minimum, co-locate with existing linear features. Construct new ROWs in designated corridors as close as technically feasible to existing linear ROW infrastructure to limit disturbance to the smallest footprint.	Yes	No designated utility corridors are located in or near the proposed project area. Under the Preferred Alternative and Northwest Main Access Route alternatives, to minimize surface disturbance and indirect impacts, the BLM would co-locate the roads along the alternative main access route with existing roads as well as with power line maintenance roads proposed under other alternatives (FEIS Section 2.4.2). Also under the Preferred Alternative and Northwest Main Access Route alternatives, a new connector road ROW would be established. This connector road would join two existing ROWs-the ROW for the Pan Mine access road and the ROW for the Pan Southwest Power Line and maintenance road. The new connector road would be sited to account for field conditions and to minimize length and therefore minimize surface disturbance (FEIS Section 2.4.2).
LR 16	Manage landfills and transfer stations on public lands to eliminate opportunities to attract and provide nesting, cover, or perches for predators.	Yes	Under all action alternatives, Midway would dispose of industrial solid waste in an on-site Class III industrial landfill that complies with NAC 444.731 through 444.747, or ship the waste off site to a licensed non-hazardous waste landfill. Midway would cover the landfill weekly in accordance with the solid waste management plan (FEIS Section 2.3.12).
LR 18	In PHMAs and subject to valid existing rights, authorize new road ROWs only when necessary for public safety or administrative access, or if it will create no new surface disturbance.	Yes	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. No surface disturbance would occur within 0.25 mile of a known lek under any of the action alternatives. Under all action alternatives except the Northwest Main Access Route alternatives and the Preferred Alternative, the existing main access route would be used. This route passes within 0.25 mile of a known active lek. To minimize potential noise impacts to Greater Sage-Grouse due to project-related traffic on the main access route, the BLM identified the Northwest Main Access Route alternatives (one alternative using the Northern Power Line Route and another using the Southern Power Line Route). Neither of the Northwest Main Access Route alternatives nor the Preferred Alternative would pass within 0.25 mile of a known lek. Under the Northwest Main Access Route Alternatives and the Preferred Alternative, numerous existing road segments and proposed road segments would be joined to form the Northwest Main Access Route. Of the proposed road segments, one 0.6-mile connector road ROW would cross PHMA. This connector road ROW would be established to join two existing ROWs - the ROW for the Pan Mine access road and the ROW for the Pan Southwest Power Line and maintenance road. The new connector road would be sited to account for field conditions and to minimize length and therefore minimize surface disturbance (FEIS Section 2.4.2 Vehicular Route Alternatives).
LR 19	In PHMAs and GHMAs, address access to valid existing rights to provide the minimum access necessary to exercise the right and maintain or enhance PHMAs and GHMAs.	Yes	The Gold Rock Mine Project holds valid existing rights and therefore has a right to establish access to its valid existing rights.

Table 1A-3 Relevant Management Decisions for Lands and Realty, Land Use Authorization

MD #	MD Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
			Under all action alternatives except the Preferred Alternative and the Northwest Main Access Route alternatives, Midway proposes to use the existing main access route that was historically used to access the Easy Junior Mine. No new roads are proposed solely to provide access related to valid existing rights (FEIS Section 2.4.2). No surface disturbance would occur within 0.25 mile of a known lek under any of the action alternatives. Under all action alternatives except the Northwest Main Access Route alternatives and the Preferred Alternative, the existing main access route would be used. This route passes within 0.25 mile of a known active lek. To minimize potential noise impacts to Greater Sage-Grouse due to project-related traffic on the main access route, the BLM identified the Northwest Main Access Route alternatives (one alternative using the Northern Power Line Route and another using the Southern Power Line Route). Neither of the Northwest Main Access Route alternatives nor the Preferred Alternative would pass within 0.25 mile of a known lek. Under the Northwest Main Access Route alternatives and Preferred Alternative, numerous existing road segments and proposed road segments would be joined to form the Northwest Main Access Route. Of the proposed road segments, one 0.6-mile connector road ROW would be established that would cross PHMA. The connector road ROW would join two existing ROWs-the ROW for the Pan Mine access road and the ROW for the Pan Southwest Power Line and maintenance road. The new connector road would be sited to account for field conditions and to minimize length and therefore minimize surface disturbance (FEIS Section 2.4.2).

Notes:
MD = Management Decision
LR = Lands and Realty
EPM = Environmental Protection Measure
GRSG = Greater Sage-Grouse
GRSG LUPA = 2015 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (BLM 2015)
PHMA = Priority Habitat Management Area
GHMA =General Habitat Management Area
OHMA = Other Habitat Management Area

Table 1A-4 Management Decisions for Cultural Resources

MD #	MD Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
CUL 1	Do not restrict tribal access to view GRSG breeding behavior for a tribe's traditional lifeways.	Yes	Under all action alternatives, only the mine area would be fenced; however, no Greater Sage-Grouse leks have been identified within the mine area.
CUL 2	Do not prohibit tribal access to traditional locations for cultural practices in PHMAs and GHMAs.	Yes	Under all action alternatives, only the mine area would be fenced. Lands within the mine area have been mapped as PHMA, GHMA, and OHMA; however, no traditional locations for cultural practices have been identified within the mine area.
CUL 3	Do not prohibit tribal collection of seeds, vegetation, or medicinal plants related to traditional cultural practices in PHMAs and GHMAs.	Yes	Under all action alternatives, only the mine area would be fenced. Lands within the mine area have been mapped as PHMA, GHMA, and OHMA; however, for safety purposes and in accordance with Mine Safety Health Administration policies and regulations, the public would be prohibited from entering the mine area without prior approval and appropriate training.

Notes:
MD = Management Decision
CUL = Cultural Resources
GRSG LUPA = 2015 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (BLM 2015)
PHMA = Priority Habitat Management Area
GHMA =General Habitat Management Area
OHMA = Other Habitat Management Area
NA = Not applicable

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Table 1A-5 **Management Decisions for Mitigation**

MD #	MD Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
MIT 1	In Nevada, coordinate with the SETT on the application of a compensatory mitigation program, such as the Nevada Conservation Credit System (CCS) (Appendix N of the GRSG LUPA (BLM 2015)) for mitigating activities that result in habitat loss and degradation of GRSG habitat in Nevada, where the application of compensatory mitigation will occur on or the credit will be applied to disturbance on BLM-administered lands.	Yes	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA. Under all of the Gold Rock Mine Project action alternatives, including the BLM Preferred Alternative, impacts to Greater Sage-Grouse habitat have been avoided and minimized to the extent practicable. The BLM and the proponent identified and considered two voluntary off-site mitigation options to offset residual (long-term unreclaimed) direct surface disturbance impacts to Greater Sage-Grouse habitat: • Use of the CCS (Section 1A.6.1), and • Funding of the implementation and monitoring of other proposed off-site habitat restoration projects on federal lands nearby that have already undergone NEPA analysis, at a ratio of 3 acres of restoration per 1 acre of residual direct surface disturbance (3:1) in PHMA and 2 acres of restoration for each 1 acre of disturbance (2:1) in GHMA (Section 1A.6.2). The BLM and the proponent coordinated with the SETT to calculate the number of debits (credit obligations) that would result from implementation of the Gold Rock Mine Project. Application of the updated 2017 CCS tools using site-specific field data for the Preferred Alternative yielded a credit obligation of 23 permanent credit obligations. Both compensatory mitigation options (use of the CCS and funding of other off-site restoration projects) are analyzed in the FEIS. The CCS tools would be applied to the selected mitigation option, if feasible, to provide additional information. Implementation of either offset mitigation option would provide habitat improvements in PHMA and in GHMA, consistent with applicable laws and regulations. The mitigation measures outlined in Section 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA. By avoiding and minimizing direct surface disturbance impacts through implementation of Applicant-Committed EPMs and application of on-site mitigation measures, and by offsetting residual (long-term unreclaimed) direct surface disturbance impacts through off-site mitigation, this project would achieve a net conservation gain. Use of the CCS would result in net benefit for Greater Sage-Grouse by calculating a number of functional acres lost and applying a mitigation ratio and a proximity ratio to determine the credit obligation. The CCS would ensure net benefit and limitation of overall risk through development of a participant contract and accompanying project-specific management plan. Its management plan would define habitat performance standards and annual biological monitoring and reporting requirements (SEP 2016b). Funding of other off-site restoration projects would result in a net conservation gain because mitigation for residual direct surface disturbance impacts would involve 3 acres of restoration for every 1 acre of disturbance (3:1) in PHMA and 2 acres of restoration for every 1 acre of disturbance (2:1) in GHMA. Restoration treatment areas would be selected in designated seasonal habitat(s) to benefit nearby Greater Sage-Grouse populations that may be affected by project activities. These selected areas would be rated using the BLM Habitat Assessment Framework (HAF) habitat suitability categories, then treated, monitored, and rated to show that these habitat restoration treatments had improved habitat suitability.

Table 1A-5 Management Decisions for Mitigation

MD #	MD Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
MIT 2	Identify compensatory mitigation areas in PHMAs and GHMAs with the potential to achieve GRSG habitat objectives (Table 2-2) [of the GRSG LUPA (BLM 2015)], in accordance with FIAT, the SFA prioritization, and the State of Nevada Strategic Action Plan.	Yes	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA. Under all of the Gold Rock Mine Project action alternatives, including the BLM Preferred Alternative, impacts to Greater Sage-Grouse habitat have been avoided and minimized to the extent practicable. The BLM and the proponent identified and considered two voluntary off-site mitigation options to offset residual (long-term unreclaimed) direct surface disturbance impacts to Greater Sage-Grouse habitat: • Use of the CCS (Section 1A.6.1), and • Funding of the implementation and monitoring of other proposed off-site habitat restoration projects on federal lands nearby that have already undergone NEPA analysis, at a ratio of 3 acres of restoration per 1 acre of residual direct surface disturbance (3:1) in PHMA and 2 acres of restoration for each 1 acre of disturbance (2:1) in GHMA (Section 1A.6.2). Both compensatory mitigation options (use of the CCS and funding of other off-site restoration projects) are analyzed in the FEIS. The CCS tools would be applied to the selected mitigation option, if feasible, to provide additional information. Implementation of either offset mitigation option would provide habitat improvements in PHMA and in GHMA, consistent with applicable laws and regulations. The mitigation measures outlined in Section 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA. By avoiding and minimizing direct surface disturbance impacts through implementation of Applicant-Committed EPMs and application of on-site mitigation measures, and by offsetting residual (long-term unreclaimed) direct surface disturbance impacts through off-site mitigation, this project would achieve a net conservation gain. Use of the CCS would result in net benefit for Greater Sage-Grouse by calculating a number of functional acres lost and applying a mitigation ratio and a proximity ratio to determine the credit obligation. The CCS would ensure net benefit and limitation of overall risk through development of a participant contract and accompanying project-specific management plan. Its management plan would define habitat performance standards and annual biological monitoring and reporting requirements (SEP 2016b). Funding of other off-site restoration projects would result in a net conservation gain because mitigation for residual direct surface disturbance impacts would involve 3 acres of restoration for every 1 acre of disturbance (3:1) in PHMA and 2 acres of restoration for every 1 acre of disturbance (2:1) in GHMA. Restoration treatment areas would be selected in designated seasonal habitat(s) to benefit nearby Greater Sage-Grouse populations that may be affected by project activities. These selected areas would be rated using the BLM Habitat Assessment Framework (HAF) habitat suitability categories, then treated, monitored, and rated to show that these habitat restoration treatments had improved habitat suitability.

Notes:
MD = Management Decision
MIT = Mitigation
CCS = Nevada Credit Conservation System
EPM = Environmental Protection Measure
GRSG = Greater Sage-Grouse
GRSG LUPA = 2015 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (BLM 2015)
PHMA = Priority Habitat Management Area
GHMA =General Habitat Management Area
OHMA = Other Habitat Management Area
NA = Not applicable

Table 1A-6 General Required Design Features

RDF #	RDF Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
GEN 1	Locate new roads outside of GRSG habitat to the extent practical	Yes	Construction of new roads would be minimized to the extent practical while still allowing access to valid claims/ore bodies. Under all action alternatives except the Northwest Main Access Route alternatives and the Preferred Alternative, the existing main access route would be used. This route passes within 0.25 mile of a known active lek. To minimize noise impacts to Greater Sage-Grouse due to project-related traffic along the Proposed Action main access route, the BLM identified the Northwest Main Access Route alternatives (one alternative using the Northern Power Line Route and another using the Southern Power Line Route) (FEIS Section 2.4.2 Vehicular Route Alternatives). Neither of the Northwest Main Access Route alternatives nor the Preferred Alternative would pass within 0.25 mile of a known lek. Under the Northwest Main Access Route alternatives and Preferred Alternative, numerous existing road segments and proposed road segments would be joined to form the Northwest Main Access Route. Of the proposed road segments, one 0.6-mile connector road ROW would be established that would cross PHMA. The connector road ROW would join two existing ROWs-the ROW for the Pan Mine access road and the ROW for the Pan Southwest Power Line and maintenance road. The new connector road would be sited to account for field conditions and to minimize length and therefore minimize surface disturbance (FEIS Section 2.4.2 Vehicular Route Alternatives). All action alternatives except the Modified County Road Re-Route and the Preferred Alternative would include a county road re-route that would involve surface disturbance during construction of 2 miles of new road and potential widening of 10 miles of existing road if in the future White Pine County decided to widen the route (FEIS Section 2.3.2 Roads). The re-route was designed to minimize surface disturbance in GHMA. To further minimize disturbance in GHMA associated with this proposed county road re-route, the BLM developed an alternative, the "Modified County Road Re-Route" that would utilize existing roads located in OHMA (FEIS Section 2.4.2). Under this alternative, re-route-related surface disturbance would occur only if in the future White Pine County decides to widen the route. This modified county road re-route is part of the Preferred Alternative. Under all action alternatives, power transmission line maintenance roads would utilize existing roads to minimize impact or would be developed as two-track roads and located outside of PHMA or GHMA where practicable (FEIS Sections 2.3 and 2.3.1). Under all action alternatives, a second water supply well could be installed near the existing Easy Junior well. If an above-ground power distribution line is installed to service that well, a two-track power line maintenance road could be established between the existing Easy Junior well and the second well. This two-track road could be located in PHMA. As a mitigation measure, Midway would bury the power line to the second well if practicable (FEIS Section 4.9.12 Additional Monitoring and Mitigation and Appendix 1A Section 1A 7 below).
GEN 2	Avoid constructing roads within riparian areas and ephemeral drainages. Construct low-water crossings at right angles to ephemeral drainages (note that such construction may require permitting under Sections 401 and 404 of the Clean Water Act).	Yes	No wetlands, riparian areas, or perennial drainages have been identified in or near the project area (FEIS Section 3.2). Under the Northwest Main Access Route alternatives (Northern or Southern power line routes), upgraded or new road construction on the southern portion of either route alternative could cross ephemeral drainages (FEIS Section 2.4.2 Vehicular Route Alternatives). Midway Water Resource Applicant-Committed EPMs (FEIS Table 2.3-8) include and are not limited to the following actions based on the Ely District RMP water resource BMPs: ▪ Construct access roads and fords that cross drainage channels to BLM road standards. ▪ Do not construct new roads or mechanical fire control lines or improve existing roads within 300 feet of a drainage channel without prior authorization. ▪ Limit drainage crossings on travel routes and trails to the minimal number necessary to minimize sedimentation and compaction.
GEN 3	Limit construction of new roads where roads are already in existence and could be used or upgraded to meet the needs of the project or operation. Design roads to an appropriate standard, no higher than necessary, to accommodate intended purpose and level of use.	Yes	Under all action alternatives except the Northwestern Main Access Route alternatives (Northern or Southern power line routes) and the Preferred Alternative, the main access route would be the existing main access route to the Easy Junior Mine (FEIS Section 2.3.2 Roads). Each of the Northwestern Main Access Route alternatives (Northern or Southern power line routes) and the Preferred Alternative would include upgrading of the existing Pan Southwest Power Line maintenance road along the central portion of the new route. The Northwest Main Access Route Alternative, Southern Power Line Route and Preferred Alternative also would include upgrading as much as possible of existing BLM or County road segments along the southern portion of the new route (FEIS Section 2.4.2 Vehicular Route Alternatives). Under the Proposed Action, the county road re-route would involve the utilization of existing BLM and White Pine County roads, along with construction of 2 miles of new road. A 0.3-mile stretch of this new road segment would be located outside of the Plan area. Similar to the existing roads along this re-route, the new road segment would be constructed to meet appropriate standards for a BLM “resource road” or “local road” (FEIS Section 2.3.2 Roads). Under the Modified County Road Re-route Alternative and the Preferred Alternative, the county road re-route would involve only existing BLM and White Pine County roads (FEIS Section 2.3.2). Under all action alternatives, power line maintenance roads would utilize existing roads to minimize impact or would be developed as two-track roads (FEIS Sections 2.3 and 2.3.1). Midway Soil Applicant-Committed EPMs (FEIS Table 2.3-8) include and are not limited to:

Table 1A-6 General Required Design Features

RDF #	RDF Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
			▪ Use existing roads as much as possible. ▪ When preparing the site for disturbance, include BMPs appropriate for site-specific conditions.
GEN 4	Coordinate road construction and use with ROW holders to minimize disturbance to the extent possible.	Yes	Each of the Northwestern Main Access Route alternatives (Northern or Southern power line routes) would include upgrading of the existing Pan Southwest Power Line maintenance road along the central portion of the new route (FEIS Section 2.4.2 Vehicular Route Alternatives). The BLM and Midway would coordinate with Mount Wheeler Power during the plan of development and construction to minimize disturbance within the existing Pan Southwest Power Line ROW. The Northwest Main Access Route Alternative, Southern Power Line Route also would include upgrading as much as possible of existing BLM or County road segments along the southern portion of the new route (FEIS Section 2.4.2 Vehicular Route Alternatives). The BLM and Midway would coordinate with White Pine County during final siting and construction of to minimize disturbance within these existing ROWs.
GEN 5	During project construction and operation, establish and post speed limits in GRSG habitat to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.	Yes	Under all action alternatives, Midway committed to post speed limits on roads throughout the project area, as well as along the selected main access route (FEIS Sections 2.3.2 Roads, 2.3.14 Public Safety, and 2.3.17 Applicant-Committed Environmental Protection Measures (FEIS Table 2.3-8)).
GEN 6	Newly constructed project roads that access valid existing rights would not be managed as public access roads. Proponents will restrict access by employing traffic control devices such as signage, gates, and fencing.	Yes	No new road would be constructed that solely provides access to valid existing rights. Under all action alternatives, Midway would install a perimeter fence around the mine area and would post signs at the intersection of existing roads Easy Junior Road and BLM 4006, indicating that the road leading south provides access only to the mine site which is not open to public use. Midway would install a staffed security gate in the perimeter fence (FEIS Sections 2.3 Introduction, 2.3.2 Roads, and 2.3.17 Applicant-Committed Environmental Protection Measures (FEIS Table 2.3-8)).
GEN 7	Require dust abatement practices when authorizing use on roads.	Yes	Midway's Air Quality Applicant-Committed EPMs (FEIS Table 2.3-8) include: ▪ Use dust abatement techniques on unpaved, unvegetated surfaces to minimize airborne dust. ▪ Maintain equipment to ensure proper function. ▪ Post and enforce appropriate speed limits within the Plan area. ▪ Comply with Nevada Division of Environmental Protection (NDEP) air permits.
GEN 9	Upon project completion, reclaim roads developed for project access on public lands unless, based on site-specific analysis, the route provides specific benefits for public access and does not contribute to resource conflicts.	Yes	Under all action alternatives except the Northwest Main Access Route alternatives and Preferred Alternative, no new roads would be developed solely to access the project area. The Northwest Main Access Route alternatives and Preferred Alternative would involve construction of several new road segments. Upon closure of the mine facilities, Midway would coordinate with the BLM and White Pine County to determine whether the new road segments constructed along the alternative main access route would be reclaimed (FEIS Section 2.4.2 Access Route Alternatives). Under all action alternatives, within the Plan area Midway committed to reclaim facilities that are no longer needed for operations as soon as practicable during the production period ("concurrent reclamation"). At the completion of mining activities, select ancillary roads would be removed and reclaimed within the fenced area. The mine access road from the security building to yards as well as select ancillary roads would be needed for site monitoring and maintenance until final bond release. Following final bond release, this section of the mine access road and the remaining ancillary roads would be reclaimed unless the BLM has identified a post-mining use for such roads (FEIS Section 2.3.16 Reclamation Plan). During the bond release process, the BLM would determine whether remaining roads provide specific benefits to public access and do not contribute to resource conflicts.
GEN 10	Design or site permanent structures that create movement (e.g., pump jack/ windmill) to minimize impacts on GRSG habitat.	Yes	No structures that result in automated repetitive movement are proposed under any of the action alternatives for the Gold Rock Mine Project.
GEN 11	Equip temporary and permanent aboveground facilities with structures or devices that discourage nesting and perching of raptors, corvids, and other predators.	Yes	Midway Migratory Bird Applicant-Committed EPMs (FEIS Table 2.3-8) include and are not limited to: ▪ Use APLIC avian deterring design measures (APLIC 2006, APLIC 2012), APLIC BMPs for electric utilities in Greater Sage-Grouse habitat (APLIC 2015), or best available technology. Midway Special Status Species Applicant-Committed EPMs (FEIS Table 2.3-8) include and are not limited to: ▪ Within 1,968 feet (600 meters) of PHMA and GHMA, implement line strike diverters and perch deterrents on all power line alternatives.
GEN 12	Control the spread and effects of nonnative, invasive plant species (e.g., by washing vehicles and equipment, minimize unnecessary surface disturbance; Evangelista et al. 2011). All projects would be required to have a noxious weed management plan in place prior to construction and operations.	Yes	Midway's non-native invasive species Applicant-Committed EPMs (FEIS Table 2.3-8) include but are not limited to: ▪ Prior to project approval, a site-specific weed survey would be performed and a weed risk assessment would be completed. ▪ Prior to the start of construction activities, develop a noxious weed management plan. ▪ Conduct monitoring for a period no shorter than the life of the permit or until bond release, and monitoring reports would be provided to the BLM. ▪ 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.

Table 1A-6 General Required Design Features

RDF #	RDF Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
GEN 13	Implement project site-cleaning practices to preclude the accumulation of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of GRSG.	Yes	Midway's hazardous and solid waste/hazardous materials Applicant-Committed EPMs (FEIS Table 2.3-8) include and are not limited to: ▪ 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. This would preclude the accumulative of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of Greater Sage-Grouse.
GEN 14	Locate project related temporary housing sites outside of GRSG habitat.	Yes	No temporary housing sites are proposed at the Gold Rock Mine Project.
GEN 15	When interim reclamation is required, irrigate site to establish seedlings more quickly if the site requires it.	-	Under all action alternatives, Midway would use a BLM-approved site-specific seed mixture that was designed for a semi-arid climate and sagebrush-steppe communities (FEIS Section 2.3.16 Reclamation Plan, Table 2.3-7 "Reclamation Seed Mixture"). Based on best available revegetation information for native desert conditions with low water availability, Midway has not proposed to irrigate interim reclamation in an effort to minimize establishment of cheatgrass and other nonnative invasive species. If more water is applied than is needed for the reclamation seed mixture to start to germinate, other nonnative invasive species are likely to flourish. Midway committed to preparing seedbeds in late summer or early fall immediately prior to seeding. Seeding would occur between the BLM-recommended dates of October 1 and March 15 of each year. If possible, seeding would be applied when a thin layer of snow (1 to 3 inches) is on the ground to optimize sagebrush seed germination and establishment. If seeding would not be completed prior to the onset of winter, surface erosion protection would be provided, and early spring seeding would occur at the earliest possible time (FEIS Section 2.3.16).
GEN 16	Utilize mulching techniques to expedite reclamation and to protect soils if the site requires it.	-	Under all action alternatives, Midway committed to use mulch or erosion-control fabric to erosion prone areas as needed (FEIS Section 2.3.16 Reclamation Plan subsection Revegetation).
GEN 17	Restore disturbed areas at final reclamation to pre-disturbance landforms and desired plant community.	No	The proposed reclamation plan is described in FEIS Section 2.3.16. Under all action alternatives, Midway would implement its vegetation Applicant-Committed EPMs (FEIS Table 2.3-8), which include and are not limited to: Reclaim disturbed areas in accordance with the approved reclamation plan. Disturbance would be re-contoured to blend with the natural topography, erosion stabilized, and an acceptable vegetative cover established in accordance with Nevada Guidelines for Successful Revegetation (NDEP 1998), prepared by the Nevada Division of Environmental Protection, the BLM, and the U.S. Department of Agriculture Forest Service. Most surface disturbance would be reclaimed. Consistent with 43 CFR 3809 regulations, the Gold Rock Mine pit would not be backfilled and the WRDA would be reclaimed in place at 3H:1V, not returned to pre-disturbance landform. Large constructed topographic features, such as WRDA and heap leach pile, would be re-contoured to the approximate natural slope with slopes at 3H:1V or to the original topography, whichever is less (FEIS Table 2.3-8).
GEN 18	When authorizing ground-disturbing activities, require the use of vegetation and soil reclamation standards suitable for the site type prior to construction.	Yes	Under all action alternatives, Midway would reclaim disturbed areas and comply with BLM revegetation standards (43 CFR 3809) and guidelines (BLM 2007), and State of Nevada reclamation standards for exploration projects or mining facilities (NRS and NAC Chapters 519A) and guidelines (NDEP 1998) (**FEIS Section 2.3.16** Reclamation Plan subsections "Revegetation" and "Post-Reclamation Monitoring and Maintenance").
GEN 19	Instruct all construction employees to avoid harassment and disturbance of wildlife, especially during the GRSG breeding (e.g., courtship and nesting) season. In addition, pets shall not be permitted on site during construction (BLM 2015).	Yes	Midway's Wildlife Applicant-Committed EPMs (FEIS Table 2.3-8) include and are not limited to: ▪ Instruct construction employees to avoid harassment and disturbance of wildlife, especially during the Greater Sage-Grouse breeding season (e.g., courtship and nesting), and that pets shall not be permitted on site during construction. ▪ Post and enforce speed limits within the Plan area to minimize the potential for collisions with wildlife.
GEN 20	To reduce predator perching in GRSG habitat, limit the construction of vertical facilities and fences to the minimum number and amount needed and install anti-perch devices where applicable.	Yes	Midway's migratory bird Applicant-Committed EPMs (FEIS Table 2.3-8) include and are not limited to: ▪ Use APLIC avian deterring design measures (APLIC 2006, APLIC 2012), APLIC BMPs for electric utilities in Greater Sage-Grouse habitat (APLIC 2015), or best available technology. The BLM considered burial of transmission lines as an alternative but did not carry the alternative forward for analysis in part due to the requirement for fences around pad-mounted transformers and other vertical facilities that would serve as perches for corvids and other predators of Greater Sage-Grouse (**FEIS Section 2.5**).
GEN 21	Outfit all reservoirs, pits, tanks, troughs or similar features with appropriate type and number of wildlife escape ramps (BLM 1990; BLM 2015).	Yes	Midway's wildlife Applicant-Committed EPMs (FEIS Table 2.3-8) include and are not limited to: ▪ During exploration activities: - Construct each sump with a slope on at least one side for easy access/egress by trapped wildlife. Fence sumps with safety netting to keep large animals out and provide a warning for recreational traffic. Use standard, nontoxic, drilling muds and additives during the exploration process. Sumps no longer needed would be allowed to dry by infiltration or evaporation to prevent discharge of drilling fluids during reclamation. Per BLM IM NVL0000-2011-008, sumps are required to be "liquid free" within 30 days of drilling completion. Extenuating circumstances requiring that a

Table 1A-6 General Required Design Features

RDF #	RDF Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
			sump remain open would be handled on a case-by-case basis. Sumps using liners to hold fluids for core drilling would be pumped to an unlined sump, the fluid allowed to infiltrate/evaporate, and the liners removed, or ripped and buried in place, as determined by the BLM. Once dry, the sumps would be backfilled and graded to the natural contour. A drill pad and sump may be used for more than one drill hole. - Partially backfill an excavated trench and use as a sump where feasible to minimize surface disturbance. ▪ Construct 8-foot high chain link fencing around the process ponds and place bird balls or other best available technology in the process ponds to discourage access by birds and bats, in accordance with its Industrial Artificial Pond Permit from NDOW.
GEN 22	Load and unload all equipment on existing roads to minimize disturbance to vegetation and soil.	Yes	Midway's Soils Applicant-Committed EPMs (FEIS Table 2.3-8) include and are not limited to: ▪ Use existing roads as much as possible ▪ Load and unload equipment on existing roads

Notes:
RDF = Required Design Feature
GEN = General
EPM = Environmental Protection Measure
GRSG = Greater Sage-Grouse
GRSG LUPA = 2015 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (BLM 2015)
PHMA = Priority Habitat Management Area
GHMA =General Habitat Management Area
OHMA = Other Habitat Management Area
NA = Not applicable
NDOW = Nevada Department of Wildlife

Table 1A-7 Relevant Required Design Features for Lands and Reality, Land Use Authorization

RDF #	RDF Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
LR-LUA 1	Where new ROWs associated with valid existing rights are required, co-locate new ROWs within existing ROWs or where it best minimizes impacts in GRSG habitat. Use existing roads or realignments of existing roads to access valid existing rights that are not yet developed.	Yes	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. No surface disturbance would occur within 0.25 mile of a known lek under any of the action alternatives. Under all action alternatives except the Northwest Main Access Route alternatives and the Preferred Alternative, the existing main access route would be used. This route passes within 0.25 mile of a known active lek. To minimize potential noise impacts to Greater Sage-Grouse due to project-related traffic on the Proposed Action main access route, the BLM identified the Northwest Main Access Route alternatives (one using the Northern Power Line Route and another using the Southern Power Line Route). Neither of the Northwest Main Access Route alternatives nor the Preferred Alternative would pass within 0.25 mile of a known lek. Under the Northwest Main Access Route alternatives and Preferred Alternative, numerous existing road segments and proposed road segments would be joined to form the Northwest Main Access Route. Of the proposed road segments, one 0.6-mile connector road ROW would be established that would cross PHMA. The connector road ROW would join two existing ROWs - the ROW for the Pan Mine access road and the ROW for the Pan Southwest Power Line and maintenance road. The new connector road would be sited to account for field conditions and to minimize length and therefore minimize surface disturbance (FEIS Section 2.4.2 Vehicular Route Alternatives). Implementation of the Preferred Alternative would minimize potential noise impacts to Greater Sage-Grouse while maintaining access to valid existing rights.
LR-LUA 2	Do not issue ROWs to counties on newly constructed energy/mining development roads, unless for a temporary use consistent with all other terms and conditions included in this document [GRSG LUPA (BLM 2015)].	Yes	The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. No surface disturbance would occur within 0.25 mile of a known lek under any of the action alternatives. Under all action alternatives except the Northwest Main Access Route alternatives and the Preferred Alternative, the existing main access route would be used. This route passes within 0.25 mile of a known active lek. To minimize potential noise impacts to Greater Sage-Grouse due to project-related traffic on the main access route, the BLM identified the Northwest Main Access Route alternatives (one using the Northern Power Line Route and another using the Southern Power Line Route). Neither of the Northwest Main Access Route alternatives nor the Preferred Alternative would pass within 0.25 mile of a known lek. Under the Northwest Main Access Route alternatives and Preferred Alternative, numerous existing road segments and proposed road segments would be joined to form the Northwest Main Access Route. Of the proposed road segments, one 0.6-mile connector road ROW would be established that would cross PHMA. The connector road ROW would join two existing ROWs - the ROW for the Pan Mine access road and the ROW for the Pan Southwest Power Line and maintenance road. The new connector road would be sited to account for field conditions and to minimize length and therefore minimize surface disturbance (FEIS Section 2.4.2 Vehicular Route Alternatives). ROWs would be obtained for construction of new road segments or amended for existing ROWs. The BLM and Midway would coordinate with Mount Wheeler Power and other appropriate parties during the plan of development and construction to minimize surface disturbance within the ROWs (FEIS Section 2.4.2).
RDF GEN 3*	Where necessary, fit transmission towers with anti-perch devices (Lammers and Collopy 2007) in GRSG habitat.	Yes	Under all action alternatives, Midway committed to minimize impacts to Greater Sage-Grouse due to predation by applying APLIC or best available technology to deter perching on power lines (FEIS Table 2.3-8), and to remove facilities during mine closure (FEIS Section 2.3.16 Reclamation Plan).

Notes:
RDF = Required Design Feature
LR-LUA = Lands and Realty, Land Use Authorization
GRSG LUPA = 2015 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (BLM 2015)
PHMA = Priority Habitat Management Area
GHMA =General Habitat Management Area
OHMA = Other Habitat Management Area
NA = Not applicable

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Table 1A-8 **Locatable Minerals Required Design Features**

RDF #	RDF Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
LOC 1	Install noise shields to comply with noise restrictions (see Action SSS 7) when drilling during the breeding, nesting, brood-rearing, and/or wintering season. Apply GRSG seasonal timing restrictions when noise restrictions cannot be met (see Action SSS 6).	Yes	The Gold Rock Mine Project holds valid existing rights and therefore is not subject to the application of the requirement to restrict noise levels when conducting exploratory drilling. Mitigation measure SSS 4, described below in Section 1A 7 of this appendix, provides additional information on recommended measures to avoid and minimize adverse impacts to Greater Sage-Grouse resulting from mine related noise during the breeding season.
LOC 2	Cluster disturbances associated with operations and facilities as close as possible, unless site-specific conditions indicate that disturbances to GRSG habitat would be reduced if operations and facilities locations would best fit a unique special arrangement.	Yes	Midway's proposed facilities are tightly clustered for economic and technical feasibility by limiting the distance haul trucks must move ore and waste, and the distance tailings must be pumped. A more compact facility layout would result in less surface disturbance. The Western Tailings Storage Facility Alternative would involve an even more compact facility layout, further minimizing disturbance. The Preferred Alternative would incorporate this more compact layout.
LOC 3	Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile Virus (Doherty 2007 in GRSG LUPA).	Yes	In the dry desert climate, minimal ponding is anticipated on site. During exploration, Midway committed to drying, backfilling and grading of exploration sumps and trenches (FEIS Section 2.3.11 Exploration). To minimize seepage, Midway would construct lined process ponds and a lined tailings storage facility. During operations, Midway would continuously recirculate produced water through the heap, process ponds and plant, and back to the heap; similarly, Midway would continuously recirculate produced water through the mill, plant, and TSF. Process ponds would be covered with bird balls or best available technology. Midway would rip the surface of the heap to minimize ponding (FEIS Sections 2.3.7 and 2.3.9). At closure, Midway would place covers on the waste rock disposal areas, heap and TSF to minimize infiltration and facilitate evapotranspiration (ET). The pregnant process pond would be converted to an ET cell to store and release heap drain down through ET until *de minimis* flow is achieved, at which time the ET cell would be closed (FEIS Section 2.3.16 Reclamation Plan).
LOC 4	Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat (Doherty 2007 in GRSG LUPA): • Overbuild size of ponds for muddy and non-vegetated shorelines • Build steep shorelines to decrease vegetation and increase wave actions • Avoid flooding terrestrial vegetation in flat terrain or low lying areas • Construct dams or impoundments that restrict down slope seepage or overflow • Line the channel where discharge water flows into the pond with crushed rock • Construct spillway with steep sides and line it with crushed rock. • Treat waters with larvicides to reduce mosquito production where water occurs on the surface	Yes	In the dry desert climate, minimal ponding is anticipated on site. During exploration, Midway committed to drying, backfilling and grading of exploration sumps and trenches (FEIS Section 2.3.11 Exploration). To minimize seepage, Midway would construct lined process ponds and a lined tailings storage facility. During operations, Midway would continuously recirculate produced water through the heap, process ponds and plant, and back to the heap; similarly, Midway would continuously recirculate produced water through the mill, plant, and TSF. Process ponds would be covered with bird balls or best available technology. Midway would rip the surface of the heap to minimize ponding (FEIS Sections 2.3.7 and 2.3.9). At closure, Midway would place covers on the waste rock disposal areas, heap and TSF to minimize infiltration and facilitate evapotranspiration (ET). The pregnant process pond would be converted to an ET cell to store and release heap drain down through ET until *de minimis* flow is achieved, at which time the ET cell would be closed (FEIS Section 2.3.16 Reclamation Plan).
LOC 5	Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve Greater Sage-Grouse habitat needs.	Yes	In compliance with the BLM's directive to manage public lands for multiple uses, Midway included the following goal in its reclamation plan (FEIS Section 2.3.16): "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 use". In its reclamation plan, Midway committed to implement a revegetation plan that includes sowing seed and planting shrub seedlings according to landscape position and aspect. This revegetation approach was designed to provide better Greater Sage-Grouse habitat than existing habitat. The proposed reclamation seed mixture includes sagebrush species appropriate to the soils and site. Midway's vegetation Applicant-Committed EPMs (FEIS Table 2.3-8) include and are not limited to: ▪ Reclaim disturbed areas in accordance with the approved reclamation plan. Disturbance would be re-contoured to blend with the natural topography, erosion stabilized, and an acceptable vegetative cover established in accordance with Nevada Guidelines for Successful Revegetation (NDEP 1998), prepared by the Nevada Division of Environmental Protection, the BLM, and the U.S. Department of Agriculture Forest Service.
LOC 6	Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling, and revegetating cut and fill slopes.	Yes	Under all action alternatives, Midway would perform concurrent reclamation of exploration disturbance, access roads and well pads where practicable (FEIS Sections 2.3.11 Exploration and 2.3.16 Reclamation Plan). The Northwest Main Access Route Alternatives (Northern Power Line Route and Southern Power Line Route) and Preferred Alternative could involve construction of new road segments that would involve cut and fill (FEIS Section 2.4.2 Vehicular Route Alternatives). Midway committed to perform interim reclamation on cut-and-fill slopes located along roads (FEIS Section 2.3.16 Reclamation Plan). The existing main access route from US 50 to the Plan area (FEIS Figure 1.1 2) includes county roads and would not be reclaimed; maintenance would revert to White Pine County (FEIS Section 2.3.16 Reclamation, Roads and Surface Facilities Not Subject to Reclamation).

Table 1A-8 Locatable Minerals Required Design Features

RDF #	RDF Text	Is the Preferred Alternative Consistent with the GRSG LUPA (Yes/No/Not Applicable)	Consistency Summary
LOC 7	Cover (e.g., fine mesh netting or use other effective techniques) all pits and tanks regardless of size to reduce Greater Sage-Grouse mortality.	Yes	Midway's wildlife Applicant-Committed EPMs (FEIS Table 2.3-8) include and are not limited to: • During exploration activities: ○ Construct each sump with a slope on at least one side for easy access/egress by trapped wildlife. Fence sumps with safety netting to keep large animals out and provide a warning for recreational traffic. Use standard, non-toxic, drilling muds and additives during the exploration process. Sumps no longer needed would be allowed to dry by infiltration or evaporation to prevent discharge of drilling fluids during reclamation. Per BLM IM NVL0000-2011-008, sumps are required to be "liquid-free" within 30 days of drilling completion. Extenuating circumstances requiring that a sump remain open would be handled on a case-by-case basis. Sumps using liners to hold fluids for core drilling would be pumped to an unlined sump, the fluid allowed to infiltrate/evaporate, and the liners removed or ripped and buried in place, as determined by the BLM. Once dry, the sumps would be backfilled and graded to the natural contour. A drill pad and sump may be used for more than one drill hole. ○ Partially backfill an excavated trench and use as a sump where feasible to minimize surface disturbance. • Construct 8-foot chain-link fencing around the process ponds and place bird balls or other best available technology in the process ponds to discourage access by birds, in accordance with its Industrial Artificial Pond Permit from NDOW. Due to the size of the pit, no cover would be applied to the pit.

Notes:
RDF = Required Design Feature
LOC = Locatable Minerals
GRSG LUPA = 2015 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (BLM 2015)
PHMA = Priority Habitat Management Area
GHMA =General Habitat Management Area
OHMA = Other Habitat Management Area
NA = Not applicable
NDOW = Nevada Department of Wildlife

CHAPTER 2 DISTURBANCE CALCULATIONS

Under Management Decision SSS 2A of the GRSG LUPA (**Table 1A-1** above), the BLM is required to conduct analysis of the area of disturbance according to the methodology presented in GRSG LUPA Appendix E. In Nevada, the disturbance management protocol (DMP) included in the GRSG LUPA provides for a 3 percent limitation on disturbance except in situations where a biological analysis indicates a net conservation gain to the species (MD SSS 2A.2a).

Additionally, for non-discretionary 43 CFR 3809 actions, disturbance cap analysis results are provided in NEPA analyses, but any exceedances of the cap (at both the project level and Biologically Significant Unit [BSU] scales) do not preclude a locatable mineral resources project with existing valid rights from BLM approval.

2.1 PROJECT SCALE CALCULATION OF THE PREFERRED ALTERNATIVE

Project-scale disturbance calculations were conducted by the BLM Nevada State Office according to the methods presented in Appendix E of the GRSG LUPA. PHMA habitat is the only habitat category considered in the calculation. PHMA within the study area for the calculation totaled 58,592 acres. The 3 percent disturbance cap for the Gold Rock Mine Project study area is approximately 1,758 acres of PHMA. Existing disturbance within the study area totaled 1,096 acres (1.87 percent of the disturbance cap study area) and included 260 acres of roads, 779 acres of mining related disturbance, and 57 acres of power lines.

The area of PHMA anticipated to be disturbed or removed under the Preferred Alternative would be 732 acres (1.25 percent of the disturbance cap study area). The combination of existing disturbance (1,096 acres) and new proposed disturbance (732 acres) totals approximately 1,828 acres, representing 3.12 percent of the project disturbance cap study area. Implementation of the Preferred Alternative for the Gold Rock Mine Project would exceed the 3 percent disturbance cap for the project disturbance cap study area. As stated above, in Nevada, the DMP provides for a 3 percent limitation on disturbance except in situations where a biological analysis indicates a net conservation gain to the species (MD SSS 2A.2a). Implementation of either voluntary offset mitigation option would result in a net conservation gain.

Use of the Nevada Conservation Credit System (CCS) would result in net benefit for Greater Sage-Grouse by calculating the number of functional acres lost and applying a mitigation ratio and a proximity ratio to determine the credit obligation. The CCS would ensure net benefit and limitation of overall risk through development of a participant contract and accompanying project-specific management plan. Its management plan would define habitat performance standards and annual biological monitoring and reporting requirements (SEP 2016b).

Also, funding of other off-site restoration projects would result in a net conservation gain because mitigation for residual (long-term unreclaimed) direct surface disturbance impacts would involve 3 acres of restoration for every 1 acre of disturbance (3:1) in PHMA and 2 acres of restoration for every 1 acre of disturbance (2:1) in GHMA. Restoration treatment areas would be selected in designated seasonal habitat(s) to benefit nearby Greater Sage-Grouse populations that may be affected by project activities. These selected areas would be rated using the BLM Habitat Assessment Framework (HAF) habitat suitability categories, then treated, monitored, and rated to show that these habitat restoration treatments had improved habitat suitability.

2.2 BIOLOGICALLY SIGNIFICANT UNIT SCALE CALCULATION OF THE PREFERRED ALTERNATIVE

The BSU disturbance is calculated once a year at the BLM National Operations Center. The affected BSU for this project is the Butte/Buck/White Pine BSU. In 2016, approximately 0.61 percent of PHMA within the Butte/Buck/White Pine BSU was disturbed by cumulative actions (Magaletti 2017).

CHAPTER 3 SEASONAL HABITATS

Seasonal Greater Sage-Grouse habitat in the vicinity of the Gold Rock Mine Project study area has been identified by NDOW in coordination with the BLM and is presented in Figure 1A-1. Seasonal habitat delineations were created using the NDOW protocol (NDOW 2016) and based on MD SSS8, which specifies seasonal delineations in a minimum area of 4 miles around the project area.

As described in Table 1A-1 above, the proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proposed project is not subject to MDs SSS2E or SSS3D. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA. The mitigation measures outlined in Sections 1A 6 (Voluntary Offset Mitigation) and 1A 7 (Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) of this appendix to the FEIS are consistent with the GRSG LUPA.

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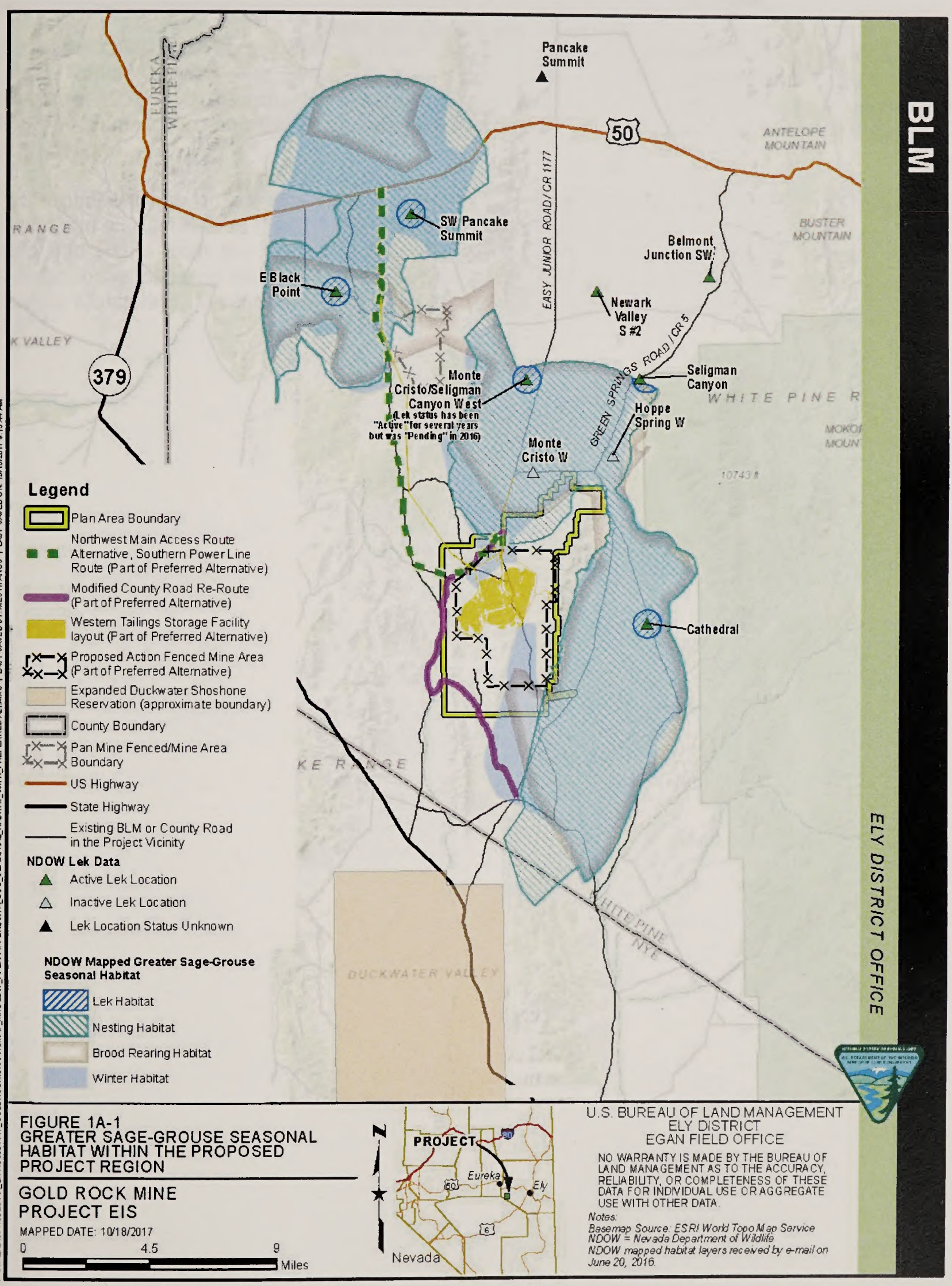

FIGURE 1A-1
GREATER SAGE-GROUSE SEASONAL HABITAT WITHIN THE PROPOSED PROJECT REGION

GOLD ROCK MINE PROJECT EIS

MAPPED DATE: 10/18/2017

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CHAPTER 4 REQUIRED LEK BUFFERS

Under the GRSG LUPA, the BLM is directed to apply the lek buffer distances identified in the USGS Report Conservation Buffer Distance Estimates for Greater Sage-Grouse – A Review (Manier et al. 2014) to discretionary project approvals. The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation.

The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA. The mitigation measures for Greater Sage-Grouse outlined in the following sections (1A 6 Voluntary Offset Mitigation and 1A 7 Other Greater Sage-Grouse Monitoring, Mitigation and Post-Mitigation Monitoring) are consistent with the GRSG LUPA.

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CHAPTER 5 HABITAT OBJECTIVES

As directed by the GRSG LUPA, all BLM use authorizations will contain terms and conditions regarding the actions needed to meet or progress toward meeting the habitat objectives. BLM habitat objectives from Table 2-2 of the GRSG LUPA are presented in Table 1A-9 below.

Table 1A-9 Greater Sage-Grouse Habitat Objectives

Attribute	Indicators	Desired Condition (Habitat Objectives)
GENERAL/LANDSCAPE-LEVEL[1]		
All Life Stages	Rangeland health assessments	Meeting all standards[2]
Cover (nesting)	Seasonal habitat Needed	>65% of the landscape in sagebrush cover
	Annual grasses	<5%
Security (nesting)	Conifer encroachment	<3% phase I (>0 to <25% cover) No phase II (25 to 50% cover) No phase III (>50% cover)
Cover and food (winter)	Conifer encroachment	<5% phase I (>0 to <25% cover) No phase II (25 to 50% cover) No phase III (>50% cover)
	Sagebrush extent	>85% sagebrush land cover
LEK (Seasonal Use Period: March 1 to May 15)[1]		
Cover	Availability of sagebrush cover	Has adjacent sagebrush cover
Security[3]	Pinyon or juniper cover	<3% landscape cover within 0.6 mile of leks
	Proximity of tall structures[4]	Use Manier et al. 2014, Conservation Buffer Distance Estimates for Greater Sage-Grouse-A Review; preference is 3 miles
NESTING (Seasonal Use Period: April 1 to June 30)[1]		
Cover	Sagebrush cover	≥ 20%
	Residual and live perennial grass cover (such as native bunchgrasses)	≥ 10% if shrub cover is <25%[5]
	Annual grass cover	<5%
	Total shrub cover	≥ 30%
	Perennial grass height (includes residual grasses)	Provide overhead and lateral concealment from predators
Security[2]	Proximity of tall structures[4] (3 feet [1 meter] above shrub)	Use Manier et al. 2014, Conservation Buffer Distance Estimates for Greater Sage-Grouse-A Review; preference is 3 miles
BROOD-REARING/SUMMER (Seasonal Use Period: May 15 to September 15; Early: May 15 to June 15; Late: June 15 to September 15)[1] UPLAND HABITATS		
Cover	Sagebrush cover	10 to 25%
	Perennial grass cover and forbs	>15% combined perennial grass and forb cover
	Deep rooted perennial bunchgrass (within 522 feet [200 meters] of riparian areas and wet meadows)	7 inches[6,7]

Table 1A-9 Greater Sage-Grouse Habitat Objectives

Attribute	Indicators	Desired Condition (Habitat Objectives)
Cover and food	Perennial forb cover	≥ 5% arid ≥ 15% mesic
RIPARIAN/MEADOW HABITATS		
Cover and food	Riparian areas/meadows	PFC
Security	Upland and riparian perennial forb availability and understory species richness	Preferred forbs are common with several species present[6] High species richness (all plants)
	Riparian area/meadow interspersion with adjacent sagebrush	Has adjacent sagebrush cover
WINTER (Seasonal Use Period: November 1 to February 28)[1]		
Cover and food	Sagebrush cover	≥ 10% above snow depth
	Sagebrush height	> 9.8 inches above snow depth

Notes:
1 Any one single habitat indicator does not define whether the habitat objective is or is not met. Instead, the preponderance of evidence from all indicators within that seasonal habitat period must be considered when assessing greater sage-grouse habitat objectives.
2 Upland standards are based on indicators for cover, including litter, live vegetation, and rock, appropriate to the ecological potential of the site.
3 Applicable to Phase I and Phase II pinyon and/or juniper.
4 Does not include fences.
5 In addition, if upland rangeland health standards are being met.
6 Relative to ecological site potential.
7 In drought years, 4-inch perennial bunchgrass height with greater than 20 percent measurements exceeding 5 inches in dry years.
Sources: Table 2-2 in Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (BLM 2015).

The BLM would establish separate long-term habitat monitoring plot locations within the vicinity of the Gold Rock Mine Project study area. These monitoring plot locations would be stratified by seasonal habitat type. BLM field staff would visit these sites and conduct baseline assessments of Greater Sage-Grouse habitat condition and then monitor the sites according to long-term monitoring scheduled for that area. These baseline data would become part of the BLM's landscape-level land health assessments for the area.

The project is an activity that would result in habitat loss/degradation. These residual habitat impacts would be mitigated (Section 1A 6). Using best available site-specific science, off-site compensatory mitigation measures would be designed to progress toward meeting the habitat objectives noted in Table 1A-9.

CHAPTER 6 VOLUNTARY OFFSET MITIGATION

As the BLM decides whether to approve a proposed non-discretionary project, the agency's discretion is limited to preventing unnecessary or undue degradation. If Applicant-Committed EPMs are anticipated to minimize but not eliminate impacts, the BLM may require additional monitoring and mitigation measures to determine the level of impact and whether mitigation measures would be needed to prevent unnecessary or undue degradation. Regarding Greater Sage-Grouse, additional mitigation measures could include a proponent's voluntary use of the CCS to offset impacts of proposed project surface disturbance (GRSG LUPA, Mitigation MD MIT1). Alternatively, for a non-discretionary project, the proponent could commit to other voluntary mitigation measures such as off-site mitigation on lands near the proposed project area.

The proposed project is a non-discretionary 43 CFR 3809 action. As a result, the project is not subject to Management Decisions (MD) SSS 2A, SSS 2F, SSS 3A, or SSS 3E of the GRSG LUPA. However, the proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (FEIS Table 2.3-8) and incorporated elements consistent with several MDs and RDFs from the GRSG LUPA.

The BLM identified other action alternatives that would minimize impacts to Greater Sage-Grouse and analyzed potential impacts related to those alternatives and the No Action Alternative. The BLM identified direct and indirect impacts to Greater Sage-Grouse and its habitat. The BLM also identified mitigation measures to further avoid or minimize direct and indirect impacts to Greater Sage-Grouse (mitigation measures W-4 through W-6, FEIS Section 4.9.12) and PHMA and GHMA (mitigation measures W-7 and W-8, FEIS Section 4.9.12).

In addition, the BLM coordinated with NDOW, the SETT and the proponent. The proponent voluntarily agreed to conduct compensatory mitigation to offset residual (long-term unreclaimed) direct surface disturbance impacts to Greater Sage-Grouse habitat (mitigation measure W-9, FEIS Section 4.9.12). Consistent with applicable laws and regulations, compensatory mitigation was not conducted for residual indirect impacts.

Under all of the Gold Rock Mine Project action alternatives, including the BLM Preferred Alternative, impacts to Greater Sage-Grouse habitat have been avoided and minimized to the extent practicable. Analysis in the Gold Rock Mine Project FEIS based on USGS 2014 mapping (USGS 2014) indicated that implementation of the Preferred Alternative would result in residual (long-term unreclaimed) direct surface disturbance impacts on approximately 268 acres of PHMA and 109 acres of GHMA. Under all action alternatives for the Gold Rock Mine Project, the proponent would provide voluntary off-site mitigation on lands near the proposed project area to offset residual direct surface disturbance impacts to Greater Sage-Grouse PHMA and GHMA (FEIS Mitigation Measure W-9).

Prior to issuance of the GRSG LUPA in 2015, the BLM and the proponent identified and negotiated voluntary funding of offset mitigation for the direct impacts of residual (long-term unreclaimed) surface disturbance. This offset mitigation would be off-site on nearby federal lands at a ratio of 3 acres of restoration per 1 acre of residual (long-term unreclaimed) direct surface disturbance (3:1) in PHMA and 2 acres of restoration for each 1 acre of residual direct surface disturbance (2:1) in GHMA. The BLM coordinated with NDOW on this voluntary plan.

After issuance of the GRSG LUPA in 2015, the BLM and the proponent identified and considered another voluntary mitigation option to offset residual direct surface disturbance impacts to Greater

Sage-Grouse habitat by use of the CCS (Section 1A 6.1) whereby the proponent would purchase credits on private lands for mitigation.

Both offset mitigation options (use of the CCS and funding of other off-site restoration projects) are analyzed in the FEIS. The CCS tools would be applied to the selected mitigation option to provide additional information, where feasible. Implementation of either offset mitigation option would provide habitat improvements in PHMA and in GHMA, consistent with applicable laws and regulations. Consistency with the GRSG LUPA is documented in this appendix to the FEIS.

The proponent would select one of the two voluntary offset mitigation options analyzed in this FEIS, or a combination thereof, prior to issuance of the ROD. The BLM would include a description of the selected mitigation option in the ROD. Within 90 days of issuance of the ROD, the BLM and the proponent, in coordination with NDOW and the SETT, would develop an offset mitigation implementation plan for the selected mitigation option. This plan would document the total area to be mitigated and specify mitigation measure(s), site selection procedures, timing of implementation, monitoring methods, treatment effectiveness criteria, retreatment procedures and cost estimation. The BLM would finalize and approve the offset mitigation implementation plan no later than 90 days after issuance of the ROD.

The offset mitigation would be initiated following approval of the offset mitigation implementation plan and prior to issuance of the Notice to Proceed. The BLM would monitor project activities including construction, operation, reclamation, and mitigation until final bond release. Final release of the reclamation bond would end the commitments required of both parties under the Plan of Operations.

Effectiveness: Either mitigation option (use of the CCS or funding the implementation and monitoring of off-site restoration projects) could be effective in mitigating residual impacts to PHMA and GHMA.

Effects on other resources: Implementing some of these mitigation measures could negatively impact socioeconomic resources by impacting the ability of the Project to conduct its operations effectively. Impacts to water resources, soils, vegetation, other wildlife resources, forest products and fuels, and range resources related to off-site conservation or restoration activities could occur. Implementing such mitigation measures is not anticipated to impact geology and minerals, paleontological resources, prime and unique farmlands, air quality, wild horses, cultural resources, Native American religious and traditional values, land use authorization and access, visual resources, recreation, environmental justice, or hazardous materials and wastes.

6.1 NEVADA CONSERVATION CREDIT SYSTEM

In accordance with a *Memorandum of Understanding between the BLM Nevada State Office and California State Office, and the Nevada Department of Conservation and Natural Resources, and the USFS Humboldt-Toiyabe National Forest* completed on April 1, 2016, the BLM coordinated with the SETT:

- The BLM added the SETT as a cooperating agency in this environmental review process.
- The BLM determined that the proposed project was consistent with the GRSG LUPA.
- The BLM analyzed CCS mitigation in at least one alternative (the Preferred Alternative) of the FEIS.

- The BLM and the proponent coordinated with the SETT in the development of a desktop analysis using the Habitat Quantification Tool (HQT, SEP 2016a) and a site-specific analysis using the CCS tools, following the policies and procedures detailed in the HQT Scientific Methods Document and CCS Manual. Both the desktop analysis and site-specific analysis are described further below.
- In considering the CCS, the BLM and the proponent examined off-site mitigation measures based initially on the results of the desktop analysis, and later, when available, on the results of the site-specific analysis.
- If the CCS is used, the proponent would obtain available credits prior to ground disturbance.
- Text included in Section 1A 2.1 discloses how net conservation gain would be quantified and achieved.

In considering the CCS, the BLM and the proponent coordinated with the SETT in 2015 to calculate the number of debits (credit obligations) that would result from implementation of the Gold Rock Mine Project and to explore options for purchasing the corresponding number of permanent credits in the CCS Registry.

The CCS tools calculate term credit obligations and permanent credit obligations. Term credit obligations reflect temporary impacts (for example, short-term impacts and long-term impacts that would be reclaimed). The duration of the credit obligation is dependent on the duration of the proposed activity or type of disturbance. Permanent credit obligations are based on area and type of impact that would occur where no reclamation or rehabilitation is proposed (for example, long-term unreclaimed disturbance impacts). For this non-discretionary action, the BLM and the proponent negotiated one mitigation option under which the proponent would purchase the final number of permanent credit obligations calculated for the Gold Rock Mine Project.

To calculate the number of term and permanent credit obligations, the CCS uses the Habitat Quantification Tool (HQT), which is a scientific approach for assessing habitat function and conservation outcomes for Greater Sage-Grouse. The HQT measures the quantity and quality of habitat at a site for [Greater] Sage-Grouse in terms of functional acres (Nevada Department of Conservation and Natural Resources Division of State Lands Sagebrush Ecosystem Program, or SEP, 2016a). The CCS uses a two-step process for determining the number of credit obligations needed for a project mitigation. First, the SETT performs a desktop analysis to generate a possible range of credit obligations then, once field verification occurs, the site-specific data that are generated are used to determine the final number of credit obligations needed.

Under the CCS, the proponent, as a Credit Buyer, would purchase credits from a Credit Developer or his agent in the CCS Registry. A Credit Developer is a landowner or manager, organization, or agency that produces, registers, or sells credits; or a facilitator who work with multiple landowners to implement credit projects, develop Management Plans, secure financial assurances, and register and sell credits (SEP 2016b).

In spring 2016 the SETT conducted a desktop analysis of the Preferred Alternative using the CCS's HQT and related CCS tools. This desktop analysis yielded a preliminary credit obligation of 3,835 to 12,782 credits needed (Celio 2016). This desktop analysis accounted for proposed direct surface disturbance and indirect impacts at the Gold Rock Mine Project, along with indirect impacts of existing and proposed anthropogenic activities in the region. The analysis also accounted for direct surface disturbance at the existing Pan Mine; however, impacts associated

with residual direct surface disturbance at the Pan Mine were mitigated in accordance with the Pan Mine ROD (BLM 2013) and would not be mitigated a second time as part of the Gold Rock Mine Project.

In summer 2016 a CCS-certified third-party verifier conducted requisite field surveys and applied the CCS tools using those data. The CCS tools accounted for proposed direct surface disturbance and indirect impacts at the Gold Rock Mine Project, along with indirect impacts of existing and proposed anthropogenic activities in the region. The site-specific analysis yielded a credit obligation of 5,635 total credit obligations, including 1,913 permanent credit obligations (Juncosa 2016). Applying a proximity ratio multiplier, a range of 1,913 to 2,200 permanent credit obligations would be required to offset the anticipated residual impacts from the Gold Rock Mine Project.

In 2017 the SETT updated the CCS tools, incorporating changes to the Habitat Suitability Index data layer, calculation of indirect impacts, and other minor factors. As of the writing of this FEIS, using the updated CCS tools, the SETT recalculated the credit obligations for the proposed project and generated a total of 2,985 credit obligations (2,962 term credit obligations and 23 permanent credit obligations) (Andrle 2017, SEP 2017). Applying a proximity ratio multiplier, a range of 23 to 26.5 permanent credit obligations would be required to fully offset the anticipated residual impacts from the Gold Rock Mine Project as presented below in Table 1A-10.

Table 1A-10 Range of Permanent Conservation Credit Obligations for the Preferred Alternative

Area of Credit To Be Acquired	Base Credit Obligation	Proximity Ratio Multiplier	Adjusted Credit Obligation
Within Butte/Buck/White Pine PMU[1]	23	1.0	23.0
Within Butte/Buck/White Pine BSU[2]	23	1.05	24.2
Within WAFWA[3] Zone III	23	1.1	25.3
Outside WAFWA Zone III	23	1.15	26.5

Notes:
1 Population Management Unit.
2 Biologically Significant Unit.
3 Western Association of Fish and Wildlife Agencies.

The credit obligation range is not the result of uncertainty in the results of the CCS HQT analysis of the Preferred Alternative, but rather from the application of a Proximity Ratio that incentivizes Midway to acquire credits to offset Gold Rock Mine Project impacts from projects located within the local Butte/Buck/White Pine Greater Sage-Grouse Population Management Unit (PMU).

At the time of writing of this FEIS in 2017, the availability and cost of a sufficient number of credits that could be purchased in proximity to the proposed project were uncertain.

6.2 OTHER VOLUNTARY OFF-SITE RESTORATION PROJECTS

Also in 2016, the BLM determined firm acreage numbers for residual disturbance of Greater Sage-Grouse habitat due to the Gold Rock Mine Project (FEIS Table 4.9-9). The BLM also identified proposed habitat restoration projects on federal lands nearby that have already undergone NEPA analysis where the voluntary, negotiated 3:1 PHMA and 2:1 GHMA offset mitigation might apply. A cost per acre of restoration treatment and associated monitoring was estimated. Based on this information, the proponent negotiated with the BLM to develop an offset mitigation option under which the proponent would voluntarily fund the implementation and monitoring of off-site restoration projects on federal lands nearby that have already undergone NEPA analysis. If this offset mitigation option were selected, the number of acres of residual disturbance within each

habitat management category to be mitigated would be based on best available site-specific science and proximity of off-site mitigation projects to the Gold Rock Mine Project. The CCS tools would be applied to proposed mitigation projects and results would be considered in the offset mitigation implementation plan, if feasible.

Best available site-specific science also would be used to determine existing Greater Sage-Grouse seasonal use and suitability in areas of proposed surface disturbance and identify possible mitigation measures. The off-site mitigation would occur at location(s) to be determined by the BLM in coordination with NDOW and the SETT. Improvements would be commensurate to the level of impacts, and preference would be given to treatments in close proximity to the project area that would benefit Greater Sage-Grouse known to use adjacent areas. Several watershed assessments are on-going in the region. Opportunities for habitat restoration within one of the assessment areas in which NEPA analysis is complete could be considered. Restoration treatment areas could be considered using the Fire and Invasives Assessment Tool (FIAT). These measures are consistent with GRSG LUPA MDs SSS 2B and SSS 3A (Table 1A-1).

The BLM would monitor the mitigation treatments for the life of the mine, with retreatment as needed using the proponent's funds earmarked for this purpose. Through application of the negotiated 3:1 and 2:1 ratio for mitigation, and monitoring and retreatment as needed, the mitigation would include provisions to ensure additionality, effectiveness and durability to account for any uncertainty as defined in the GRSG LUPA.

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CHAPTER 7 OTHER GREATER SAGE-GROUSE MONITORING, MITIGATION AND POST-MITIGATION MONITORING

The Gold Rock Mine Project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The following monitoring and mitigation measures are recommended to minimize and mitigate potential impacts to Greater Sage-Grouse and are analyzed in the EIS:

Issue: Under all action alternatives, no surface disturbance or mining activity would occur within 0.25 mile of a known lek (FEIS Table 4.9-3); however, noise from project-related traffic on the selected main access route during Greater Sage-Grouse breeding season could impact Greater Sage-Grouse near the project's main access route.

EIS Mitigation Measure W-4: Under all action alternatives except the Northwest Main Access Route alternatives and the Preferred Alternative, Midway would coordinate with the BLM and NDOW to develop a noise monitoring and mitigation plan that outlines:

- Protocols as recommended in Appendix M of the GRSG LUPA or best available science to collect ambient noise measurements in areas of existing and proposed development;
- Methods the proponent would use to manage project-related noise so that levels would not exceed 10 decibels on the A-weighted scale (dBA) above the measured ambient noise levels during the period of 1 hour before sunrise until 3 hours after sunrise at the perimeter of potentially affected leks during the active breeding season of March 1 through May 15, consistent with existing Pan Mine noise monitoring requirements per BLM (2013));
- Strategies to differentiate between mine-related travel and other travel on the proposed main access route, if practical;
- Consideration of and correlation with available site-specific Greater Sage-Grouse lek survey data and habitat use information including currently contracted USGS studies; and
- Adaptive management and mitigation measures to be implemented in response to observations of noise levels higher than 10 dBA above observed ambient noise levels at lek perimeters.

Noise monitoring would be conducted at the active Seligman Canyon lek, which is located within 0.25 mile of the existing main access route.

The noise monitoring and mitigation plan would be approved by the BLM and put in place no later than 90 days after the signing of the Notice to Proceed for this project. Mitigation measures included in the final noise monitoring and mitigation plan could include:

- Reducing vehicle speed limits on the selected main access route during the period from March 1 through May 15;
- Restricting the use of engine brakes during the breeding period from March 1 through May 15;

- Implementing noise-dampening measures on mine-related sources; or
- Scheduling deliveries and shift changes outside of the breeding period (March 1 to May 15 from 1 hour before sunrise to 3 hours after sunrise per BLM (2013)) and preventing mine-related traffic from using the selected main access route or Easy Junior Road between US 50 and the Gold Rock Mine Project during the breeding period.

If noise exceedances occur, mitigation measures would be implemented to limit noise to less than 10 dBA above ambient, consistent with MD SSS 2F and SSS 3E in the GRSG LUPA (BLM 2015).

This noise monitoring and mitigation plan would be revisited and amended as necessary each year following the collection and review of all available data and resources. If, after 2 years of actual mining activity, noise monitoring data show that the proponent is in compliance with the mitigation measure, the BLM could consider discontinuing monitoring; however, if at some point during the life of the mine a change occurs which could lead to a significant increase in the noise level at a lek (for example, a significant change in processing method, equipment location or activity level), noise monitoring would be re-initiated.

Effectiveness: By implementing measures such as these, Midway would be able to monitor noise and ensure that traffic and other noise associated with the Gold Rock Mine Project is limited to 10 dBA above observed ambient noise levels at known active leks near the proposed main access route, and to minimize or eliminate noise impact to Greater Sage-Grouse during breeding activities.

Effects on other resources: Preventing mine-related traffic from using Easy Junior Road and Green Springs Road during the strutting period would negatively impact socioeconomic resources because it would unreasonably limit mine business operations. Implementing mitigation measures such as these is not anticipated to impact water resources, geology and minerals, paleontological resources, soils, prime and unique farmlands, air quality, vegetation, wildlife resources, range resources, forest products and fuels, wild horses, cultural resources, Native American religious and traditional values, land use access and authorization, visual resources, recreation, or hazardous and solid wastes.

EIS Mitigation Measure W-5: Under the Northwest Main Access Route alternatives and Preferred Alternative, Midway would comply with noise limit requirements established for the Pan Mine access road. Midway would coordinate with the BLM and NDOW to develop and submit a noise monitoring and mitigation plan subject to BLM approval that addresses noise impacts from traffic associated with both the Pan Mine and the Gold Rock Mine Project that could impact the active Southwest Pancake Summit and East Black Point leks. These leks are located approximately 1.1 and 1.6 miles, respectively, from the Pan Mine access road that would be a part of the alternative main access route. This monitoring and mitigation plan would specify the steps that the operators of the Pan Mine and Gold Rock Mine Project would take to ensure that project-related noise levels at the two nearby leks would remain below 10 dBA above ambient.

This noise monitoring and mitigation plan would outline:

- Protocols as recommended in Appendix M of the GRSG LUPA or best available science to collect ambient noise in areas of existing and proposed development;
- Methods the proponent would use to manage project-related noise so that levels would not exceed 10 dBA above the measured ambient noise levels during the period of 1 hour

before sunrise until 3 hours after sunrise at the perimeter of potentially affected leks during the active breeding season of March 1 through May 15, consistent with existing Pan Mine noise monitoring requirements per BLM (2013));

- Strategies to differentiate between mine-related travel and other travel on the proposed main access route, if practical;
- Consideration of and correlation with available site-specific Greater Sage-Grouse lek survey data and habitat use information including currently contracted USGS studies; and
- Adaptive management and mitigation measures to be implemented in response to observations of noise levels higher than 10 dBA above observed ambient noise levels at lek perimeters.

This noise monitoring and mitigation plan would be revisited and amended as necessary each year following the collection and review of all available data and resources. If, after 2 years of actual mining activity, noise monitoring data show that the proponent is in compliance with the mitigation measure, the BLM could consider discontinuing monitoring. However, if at some point during the life of the mine a change occurs that could lead to a significant increase in the noise level at a lek (for example, a significant change in processing method, equipment location or activity level), noise monitoring would be re-initiated.

Effectiveness: This measure would provide additional information to assess potential impacts from the addition of Gold Rock Mine Project traffic noise to Greater Sage-Grouse and its habitat at leks near the Northwest Main Access Route alternatives or Preferred Alternative.

Effects on other resources: Noise monitoring is not anticipated to impact water resources, geology and minerals, paleontological resources, soils, prime and unique farmlands, air quality, vegetation, wildlife resources, range resources, forest products and fuels, wild horses, cultural resources, Native American religious and traditional values, land use access and authorization, visual resources, recreation, or hazardous and solid wastes.

EIS Mitigation Measure W-6: Under all action alternatives except the Northwest Main Access Route alternatives and the Preferred Alternative, Midway would provide at least one breeding season of baseline ambient noise data prior to beginning construction activities.

Under the Northwest Main Access Route alternatives and Preferred Alternative, the alternative main access route would include the Pan Mine access road. Midway has already collected baseline ambient noise data, as well as monitoring data during construction and operation, at leks located near the Pan Mine access road. Therefore, no additional baseline noise data collection would be required under the Northwest Main Access Route alternatives or Preferred Alternative.

Effectiveness: Collecting these data prior to construction would establish a site-specific ambient baseline. This measured ambient baseline forms the basis for effective noise monitoring and would provide additional information to assess potential impacts to Greater-Sage Grouse and its habitat at leks near the Proposed Action main access route.

Effects on other resources: Noise monitoring is not anticipated to impact water resources, geology and minerals, paleontological resources, soils, prime and unique farmlands, air quality, vegetation, wildlife resources, range resources, forest products and fuels, wild horses, cultural resources, Native American religious and traditional values, land use access and authorization, visual resources, recreation, or hazardous and solid wastes.

Issue: A proposed above-ground distribution power line from the mine area to the existing Easy Junior water supply well would cross PHMA, offering perching habitat for raptors or ravens and possibly impacting Greater Sage-Grouse and use of its habitat.

EIS Mitigation Measure W-7: Surface disturbance in PHMA and GHMA is summarized in Table 4.9-5 of the FEIS. Under all action alternatives, to mitigate impacts to Greater Sage-Grouse and use of its habitat, Midway would bury the distribution power line from the mine to the existing Easy Junior water supply well, if feasible, based on soil conditions and other technical aspects. A surface area approximately 20 feet wide would be disturbed along the length of the route. Burying this lower voltage power line would involve direct burial of a distribution power cable (i.e., 25 kV) and installation of in-ground 6 ft cubical junction boxes or "pull boxes" spaced every 1,000 feet to 5,000 feet. No maintenance road would be required or established. If burial of the power line from the mine to the Easy Junior well is technically feasible, and if the existing water pipeline would require replacement, the power line and water pipeline would be co-located and buried within the existing water pipeline corridor.

If burial of the power line is not technically feasible, Midway would install an above-ground power line and establish a two-track maintenance road along a route that would minimize new disturbance in or avoid Greater Sage-Grouse PHMA and GHMA. Where feasible, the power line route would be co-located with existing disturbance. Midway would use APLIC avian deterring design measures (APLIC 2006, APLIC 2012), BMPs (APLIC 2015), or best available technology to discourage birds from perching on power lines or poles. This proposed mitigation is consistent with GRSG LUPA MDs SSS 1B; MDs SSS 2C, SSS 3B, and SSS 4 regarding RDF GEN 11 (Tables 1A-1 and 1A-2) and with MD LR 10 (Table 1A-3).

Effectiveness: Burying this distribution power line and associated pull boxes would minimize impacts to Greater Sage-Grouse from predation by reducing perching habitat and indirect impacts due to Greater Sage-Grouse avoidance of habitat within 600 meters of above-ground power lines.

Under all action alternatives, surface disturbance caused by burial activities would be reclaimed to further minimize impacts to Greater Sage-Grouse habitat.

Under all action alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative, burying the distribution power line from the mine to the Easy Junior well would disturb approximately 9 acres of PHMA with no related disturbance in GHMA or OHMA. Under the Western Tailings Storage Facility Alternative and Preferred Alternative, burying the distribution power line would disturb approximately 12 acres of PHMA with no related disturbance in GHMA or OHMA. Under all action alternatives, burying the distribution line would result in 5 fewer acres of disturbance in PHMA (Table 1A-11).

If the distribution power line from the mine to the Easy Junior well is installed above ground and a two-track maintenance road is established along a route that would minimize new disturbance in or avoid PHMA and GHMA, installation activities could disturb approximately 5 acres of PHMA, 3 acres of GHMA, and 13 acres of OHMA (Table 1A-11). When compared to all alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative, this above-ground mitigation measure would result in approximately 9 fewer acres of disturbance in PHMA, with 3 more acres of disturbance in GHMA and 13 more acres of disturbance in OHMA (Table 1A-11). When compared to the Western Tailings Storage Facility Alternative and Preferred Alternative, this above-ground mitigation measure would result in 12 fewer acres of PHMA, 3 more acres of disturbance in GHMA, and 13 more acres of disturbance in OHMA (Table 1A-11).

Table 1A-11 Surface Disturbance That Would Result During Implementation of Mitigation Measures Related to Supplying Power to the Existing Easy Junior Water Supply Well

Alternative	With No Mitigation			With Mitigation: Burial			With Mitigation: Above-ground installation along a route that would minimize new disturbance in or avoid Greater Sage-Grouse PHMA and GHMA		
	PHMA (acres)	GHMA (acres)	OHMA (acres)	PHMA (acres)	GHMA (acres)	OHMA (acres)	PHMA (acres)	GHMA (acres)	OHMA (acres)
All action alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative	14	0	0	9	0	0	5	3	13
Western Tailings Storage Facility Alternative and Preferred Alternative	17	0	0	12	0	0	5	3	13

Notes:
Acreage of disturbance was calculated using USGS August 2014 Greater Sage-Grouse Habitat Management Area Mapping (USGS 2014).
Rounding of acreage results in total acreage discrepancies.

Effects on other resources: For the proposed distribution power line to the Easy Junior well, burying the power line would involve approximately 9 acres of surface disturbance, would impact previously disturbed soils and vegetation and could result in similar types, intensity and duration of impact to undisturbed soils and vegetation resources as those identified for the Proposed Action. Excavation and surface disturbance activities associated with burial of the power line could result in types, intensity, and duration of impact similar to those identified for the Proposed Action for the following resources: geology and minerals, paleontological resources, other wildlife resources, range resources, forest products and fuels, wild horses, cultural resources, Native American religious and traditional values, visual resources, and recreation. Burying the power line is not anticipated to impact water resources, prime and unique farmlands, air quality, land use authorization and access, socioeconomics, environmental justice, or hazardous materials and wastes.

Implementing a mitigation measure of shifting the proposed above-ground route would result in approximately 20 acres of surface disturbance associated with installing power poles and establishing a two-track maintenance road, compared to 14 acres of disturbance under all action alternatives except the Western Tailings Storage Facility Alternative and Preferred Alternative and 17 acres of disturbance under the Western Tailings Storage Facility Alternative and Preferred Alternative. Shifting the above-ground distribution power line route to minimize new disturbance in or avoid PHMA and GHMA would result in types, intensity and duration of impact to soils, vegetation, and land use authorization and access similar to those identified for the Proposed Action. This mitigation measure could result in similar types, intensity and duration of impact as those identified for the Proposed Action for the following resources: geology and minerals, paleontological resources, other wildlife resources, range resources, forest products and fuels, wild horses, cultural resources, Native American religious and traditional values, visual resources, and recreation. Shifting the above-ground power line route is not anticipated to impact water resources, prime and unique farmlands, air quality, land use authorization and access, socioeconomic resources, environmental justice, or hazardous materials and wastes.

Issue: If a second water supply well is required, the proposed above-ground distribution power line to that well would cross PHMA, offering perching habitat for raptors or ravens and possibly impacting Greater Sage-Grouse and use of its habitat.

EIS Mitigation Measure W-8: Under all action alternatives, if a second water supply well is required, Midway would bury the distribution power line from the existing Easy Junior water supply well to the second well, if feasible based on soil conditions and other technical aspects. The second well would be located within 0.5 mile of the existing Easy Junior well. An area approximately 20 feet wide would be disturbed along the length of the route. Burying this power line would involve direct burial of a distribution power cable (i.e., 25 kV) and installation of in-ground 6 ft cubical junction boxes or "pull boxes" spaced every 1,000 feet to 5,000 feet. No maintenance road would be required or established.

Effectiveness: Burying this distribution power line and associated pull boxes would minimize impacts to Greater Sage-Grouse from predation by reducing perching habitat and indirect impacts due to Greater Sage-Grouse avoidance of habitat within 600 meters of above-ground power lines.

Under all action alternatives, burying the distribution power line to the second well would disturb approximately 1 acre of PHMA, compared to approximately 6 acres for the proposed above-ground line and maintenance road (Table 1A-12). This surface disturbance would be reclaimed, which would help minimize impacts on Greater Sage-grouse habitat.

Under all action alternatives, installation of an above-ground distribution power line along a route other than a straight line between the existing well and proposed well, which was analyzed in the FEIS, would result in a longer distance and therefore more surface disturbance. Most of the habitat within 0.5 mile of the Easy Junior well is mapped as PHMA. More surface disturbance would impact more PHMA. Following such a route would not mitigate impacts to Greater Sage-Grouse habitat; therefore, the BLM did not propose or analyze such a mitigation measure.

Table 1A-12 Surface Disturbance That Would Result During Implementation of Mitigation Measures Related to Supplying Power to the Possible Second Water Supply Well

Alternative	With No Mitigation			With Mitigation: Burial of Distribution Power Line		
	PHMA (acres)	GHMA (acres)	OHMA (acres)	PHMA (acres)	GHMA (acres)	OHMA (acres)
All action alternatives	6	0	0	1	0	0

Notes:
Acreage of disturbance was calculated using USGS August 2014 Greater Sage-Grouse Habitat Management Area Mapping (USGS 2014).
Rounding of acreage results in total acreage discrepancies.

Effects on other resources: If a second water supply well is required, implementing a mitigation measure of burying this power line would result in approximately 1 acre of surface disturbance. This surface disturbance would result in types, intensity and duration of impact to soils and vegetation resources similar to those identified for the Proposed Action. Excavation and surface disturbance activities associated with burial of the power line could result in types of impact similar to those identified for the Proposed Action for the following resources: geology and minerals, paleontological resources, other wildlife resources, range resources, forest products and fuels, wild horses, cultural resources, Native American religious and traditional values, visual resources, and recreation. Burying the distribution power line to the second well is not anticipated to impact water resources, prime and unique farmlands, air quality, land use authorization and access, socioeconomics, environmental justice, or hazardous materials and wastes.

CHAPTER 8 REFERENCES

Andrle, Katie. 2017. Personal communication [Aug 7 e-mail to A. Juncosa, EcoSynthesis, Truckee, California RE: Recalculation of credit obligations for the Gold Rock Mine Project using 2017 Debit Calculator]. Nevada Sagebrush Ecosystem Technical Team, Carson City, Nevada. 1 pg.

Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute and APLIC. Washington, D.C. 227 pages.

APLIC. 2012. Reducing Avian Collisions with Power Lines. The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C. 184 pages.

APLIC. 2015. Best Management Practices for Electric Utilities in Sage-Grouse Habitat. Edison Electric Institute and APLIC. Washington, DC. June.

Celio, Jennifer. 2016. Personal communication [June 20 e-mail to M. Ryan, Bureau of Land Management, Ely, Nevada. RE: Debit Range for EIS {Gold Rock Mine Project}]. Nevada Sagebrush Ecosystem Technical Team, Carson City, Nevada, 1 page.

Doherty, M.K. 2007. Mosquito populations in the Powder River Basin, Wyoming: a comparison of natural, agricultural, and effluent coal-bed natural gas aquatic habitats. Thesis. Montana State University, Bozeman, Montana, USA. November. 105 pages. Available at: http://scholarworks.montana.edu/xmlui/handle/1/1184. Accessed December 7, 2016.

Evangelista, P.H., A.W. Crall, and E. Bergquist. 2011. Invasive Plants and Their Response to Energy Development. *In Energy Development and Wildlife Conservation in Western North America*. Island Press. 15 pages.

Juncosa, A. 2016. Personal communication [Oct 10 memorandum to Nevada Sagebrush Ecosystem Technical Team RE: Gold Rock Project Conservation Credit System Analysis Supplemental Information]. Senior Ecologist, Ecosynthesis Scientific & Regulatory Services, Inc., Truckee, California. 8 pp.

Lammers and Collopy. 2007. Effectiveness of Avian Predator Perch Deterrents on Electric Transmission Lines. The Journal of Wildlife Management. DOI: 10.2193/2005-752. November.

Magaletti, Matthew. 2017. Personal communication [Aug 24 e-mail to E. Duvall, Arcadis. RE: comment form on August 2017 FEIS, Gold Rock Mine Project.] Nevada/California Sage Grouse Implementation Lead, Bureau of Land Management, Nevada State Office 4 pp.

Manier, D.J., Z.H. Bowen, , M.L. Brooks, M.L. Casazza, P.S. Coates, P.A. Deibert, S.E. Hanser, and D.H. Johnson. 2014, Conservation buffer distance estimates for Greater Sage-Grouse—A review: U.S. Geological Survey Open-File Report 2014–1239, 14 p., http://dx.doi.org/10.3133/ofr20141239.

Midway Gold U.S. Inc. 2013a. Gold Rock Mine Plan of Operations and Reclamation Permit Application BLM File Serial Number NVN-([To Be Assigned Upon Issuance of Permit]) Reclamation Permit Number 0326. Submitted to United States Department of Interior

Bureau of Land Management Ely Field Office and Nevada Division of Environmental Protection Bureau of Mining Regulation and Reclamation. February 2013.

Natural Resource Conservation Service. 2012. Applying the Sage-Grouse Fence Collision Risk Tool to Reduce Bird Strikes. CEAP Conservation Insight Conservation Effects Assessment Project. November. 5 pages.

Nevada Natural Heritage Program and the Sagebrush Ecosystem Technical Team. 2014. Nevada Conservation Credit System Manual v0.98 prepared by Environmental Incentives, LLC. South Lake Tahoe, California. November 21, 2014. 101 pages.

Nevada Department of Wildlife. 2016. Memorandum on Greater Sage-Grouse seasonal habitat delineations for BLM. J. Tull and S. Espinoza to NDOW Habitat and Game Divisions. May 31.

Nevada Division of Environmental Protection. 1998. 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. September 3.

Nevada Division of State Lands Sagebrush Ecosystem Program (SEP). 2016a. Habitat Quantification Tool Scientific Methods Document v1.1. Prepared by Environmental Incentives, LLC and EcoMetrix Solutions Group, LLC for the State of Nevada Department of Conservation and Natural Resources. January 25. 75 pages.

SEP. 2016b. State of Nevada Conservation Credit System Manual.v1.1. Prepared by Environmental Incentives, LLC for the State of Nevada Department of Conservation and Natural Resources and Nevada Sagebrush Ecosystem Council. January 25. 106 pages.

SEP. 2017. Letter dated September 18 to T. Williams, GRP Minerals, LLC, Englewood, Colorado RE: Sagebrush Ecosystem Technical Team quality assurance review and finalization of debit calculation. September 15. 1 pg.

Sage-Grouse National Technical Team. 2011. A Report on National Greater Sage-Grouse Conservation Measures. December 21.

U.S. Bureau of Land Management (BLM). 1989. Fencing. BLM Manual Handbook H-1741-1. Rel 1-1572. December 6, 1989. Washington, D.C.

BLM. 1990. Handbook H-1624-1—Planning for Fluid Mineral Resources. Washington, DC. May 1990.

BLM. 2007. Northeastern Great Basin Resource Advisory Council (RAC) Standards and Guidelines For Vegetation. March 7, 2007. [Web page]. Located at http://www.blm.gov/nv/st/en/res/resource_advisory/northeastern_great.html. Accessed: October 15, 2014.

BLM. 2008. Ely District Record of Decision and Approved Resource Management Plan. U.S. Department of the Interior, Bureau of Land Management. August 2008.

BLM. 2012. Decision Record/FONSI (November 15, 2012) Finding of No Significant Impact (FONSI) Midway Gold Rock Project. DOI-BLM-NVL010-2012-0044-EA. Signed November 15, 2012. Available on the Web: [not yet].

BLM. 2013. Pan Mine Project Record of Decision Plan of Operations Approval, and Approval of Issuance of Right-Of-Way Grant. U.S. Department of the Interior, Bureau of Land Management. December 2013.

BLM. 2015. Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment. Attachment 2 From the USDI 2015 Record of Decision and Approved Resource Management Plan Amendments for the Great Basin Region including the Greater Sage-Grouse Sub-Regions of: Idaho and Southwestern Montana, Nevada and Northeastern California, Oregon, and Utah. US Department of the Interior Bureau of Land Management Nevada State Office, Reno, Nevada. 104 pages. September. [Web page]. Located at: https://www.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=31103. Accessed: September 22, 2015.

U.S. Geological Survey (USGS). 2014. Sage-Grouse Management Category Geographic Information System files. Western Ecological Research Center, Dixon Field Station, Dixon. CA. Nevada Sagebrush Ecosystem Program, Carson City, NV. August.

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Appendix 1B

Programmatic Agreement
Between the Bureau of Land
Management, Egan Field Office
and the Nevada State Historic
Preservation Officer Regarding the
Midway Gold US Inc. Gold Rock
Project

Programmatic Agreement
Between
The Bureau of Land Management, Egan Field Office
And
The Nevada State Historic Preservation Officer
Regarding the Midway Gold US Inc. Gold Rock Project

WHEREAS, Midway Gold US Inc. (Midway) intends to seek authorization from Bureau of Land Management Egan Field Office (BLM) for mining operations at the Gold Rock Project in White Pine County, Nevada; and

WHEREAS, the BLM has determined that the authorization of mining operations at the Gold Rock Project may have the potential to affect historic properties eligible for inclusion in the National Register of Historic Places (NRHP), and has consulted with the Nevada State Historic Preservation Officer (SHPO) pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA); and

WHEREAS, effects to historic properties (as that term is defined in 36 C.F.R. § 800.16(l) (1)) in the Area of Potential Effect (APE) (Appendix A) cannot be fully determined and the signatories desire to enter into this Programmatic Agreement (PA) to set forth procedures to be followed in satisfaction of BLM's Section 106 responsibilities of the NHPA, for the Gold Rock Project in the APE; and

WHEREAS, BLM has consulted with Midway regarding the effects of the undertaking on historic properties and has invited Midway to be a concurring party to this PA; and

WHEREAS, BLM has consulted with the Advisory Council on Historic Preservation (ACHP) pursuant to 36 C.F.R. § 800.14(b) to develop and execute this PA and the ACHP has elected not to formally enter consultation on the development of this PA; and

WHEREAS, the Duckwater Shoshone Tribe and Te-Moak Tribe of Western Shoshone have been identified as Indian Tribes (Tribes) that may attach religious and cultural significance to historic properties within the APE and the Tribes have been contacted and offered an opportunity to participate as concurring parties to this PA; and

WHEREAS, White Pine and Nye Counties (Counties) operate and maintain a county road in the Gold Rock project area that Midway proposes to modify, and the BLM is consulting with the Counties and has invited them to be concurring parties to this PA with respect to this issue;

WHEREAS, BLM has consulted with Mt. Wheeler Power which is responsible for construction of a transmission line to the Gold Rock Project on lands managed by the BLM, and the BLM has invited Mt. Wheeler Power to be a concurring party to this agreement; and

WHEREAS, BLM and the SHPO are referred to as the Signatory Parties to this PA; and

WHEREAS, the BLM will notify the public of the Gold Rock Project and will provide members of the public with an opportunity to express their views on the development of the PA and the Section 106 process pursuant to 36 C.F.R. § 800.6(a)(4) and 36 C.F.R. § 800.14(b)(2)(ii) during and concurrent with the public comment process for the draft environmental impact statement (DEIS) for the Gold Rock Project. A copy of the PA will be made available to the public at the Egan Field Office and copies provided to all consulting parties. During this notification period, certain individuals and/or organizations with a demonstrated interest in the APE, may participate as consulting parties; and

WHEREAS, BLM has a Nationwide Programmatic Agreement (2012) and a State Protocol Agreement (Protocol) between BLM and the SHPO (2012), that govern all other undertakings and historic properties that may occur within the APE and those agreements are hereby incorporated by reference into this PA; and

WHEREAS, the definitions given in the Protocol apply throughout this PA, unless specifically modified below; and

WHEREAS, this PA covers all aspects of authorized mining operations for the Gold Rock Project; and

NOW, THEREFORE, the Signatory Parties agree that the Gold Rock Project shall be administered in accordance with the following stipulations to ensure that historic properties will be treated to avoid or mitigate effects to the extent practicable, regardless of surface ownership, and to satisfy BLM's Section 106 responsibilities for all aspects of the Gold Rock Project.

I. ROLES AND RESPONSIBILITIES

A. BLM is responsible for administering this PA and will ensure that all of its stipulations are carried out. This includes but is not limited to ensuring that all parties carry out their responsibilities; overseeing all cultural resources work; and assembling all submissions to the SHPO and consulting parties during the implementation of this PA. The Egan Field Manager is the BLM Authorized Officer for the Gold Rock Project. The Authorized Officer, or their designee, is the Gold Rock Project point of contact for BLM.

B. Midway's designee, its Vice President of Environmental Affairs or his designee, will be the responsible point of contact for the Gold Rock Project and provide BLM with any and all information needed to implement this PA and in Midway's possession or reasonably available to Midway.

C. Midway shall bear the expense of identification, evaluation, and treatment of all historic properties directly or indirectly affected by Gold Rock Project activity. Such

costs shall include, but not be limited to, pre-field planning, fieldwork, post-fieldwork analysis, research and report preparation, interim and summary report preparation, publications for the general public, and the cost of curating project documentation and artifact collections. If Midway withdraws project applications, then Midway shall incur no further expense except for completing fieldwork and post-fieldwork activities (production of final inventory, testing and data recovery reports covering the description and analysis of data, and the curation of materials) that has occurred as of the date of withdrawal.

D. BLM will be responsible for all submissions to SHPO, Tribes, and other consulting parties identified during the implementation of this PA for the Gold Rock Project. Any submission to SHPO or interested parties not from BLM will be considered as informational only and will not trigger any compliance timelines or other actions.

E. BLM shall ensure that ethnographic, historic, architectural and archaeological work conducted pursuant to this PA is carried out by or under the direct supervision of persons meeting qualifications set forth in the draft Secretary of the Interior's Professional Qualification Standards dated June 20, 1997 (62 FR 33707-33723) and who have been permitted for such work on public lands by BLM.

F. Midway, in cooperation with Signatory Parties, shall provide in-house training to ensure that all its personnel and all the personnel of its contractors and subcontractors are directed not to engage in the illegal collection of historic and prehistoric materials. Subsequent hires will also be required to be subject to similar training. Training can be in association with Midway's safety and or related job training and project orientation. Midway shall cooperate with BLM to ensure compliance with the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470) on Federal lands and with Nevada Revised Statutes (NRS) 381 and 383 for all other lands as applicable.

G. Midway will be responsible for costs of rehabilitation or mitigation required as a result of Gold Rock project activities, and may be subject to penalties under applicable federal, state or local law, should damage to cultural resources inside or outside the APE occur during the period of construction, mine operation or reclamation due to the unauthorized or negligent actions of Midway, their employees, contractors or any other project personnel operating under Midway's supervision, direction, or control.

H. If the Gold Rock Project is sold or otherwise transferred to another proponent other than Midway, the Signatory Parties will determine within 90 days of the sale or transfer if the PA will remain in effect, be amended per Stipulation XIII, or be terminated per Stipulation XIV. All provisions of the PA will remain in effect until such a determination is made.

II. IDENTIFICATION OF HISTORIC PROPERTIES

A. BLM shall identify interested persons through the NEPA process and involve interested parties, as appropriate, in all activities carried out under this PA associated with the undertaking.

B. Midway, through its consulting archaeologist, shall ensure that cultural resources inventories will be conducted on all lands identified within the approved Gold Rock Project APE (Appendix A) for direct effects in accordance with the Protocol.

C. The APE for assessing indirect effects (visual, audible, and atmospheric) will be the direct disturbance area plus one mile outward in all directions from the perimeter of the APE. The indirect APE may extend beyond the one-mile convention to encompass properties that have traditional religious and cultural importance to Indian tribes or other geographically extensive historic properties such as trails or roads, when effects have been determined to extend beyond this distance. The assessment of visual effects will incorporate a Geographic Information System (GIS) viewshed assessment as well as BLM Visual Resource Management (VRM) concepts. Midway through its consulting archaeologist will obtain data from methods outlined in Stipulation II E, to identify historic properties outside of the direct APE that would be adversely affected by visual impacts from the Gold Rock Project. The BLM will consult with Indian tribes to identify any properties of traditional religious and cultural importance that might be affected by the implementation of the Gold Rock Project and its associated transmission line.

D. Any amendments on the Gold Rock Project and future exploration outside the Gold Rock Project APE will be surveyed following BLM Class III Standards to identify historic properties.

E. BLM shall have the consulting archaeologist conduct records searches of General Land Office (GLO) plat maps, BLM's Master Title Plats/Historic Index, the GLO Land Records website (http://www.glorecords.BLMSWFO.gov/); the Nevada State Lands Patent Database Query (http://www.lands.nv.gov/patents/patents.htm); the Nevada Cultural Resources Information System (NVCRIS), the National and State Registers of Historic Places, National Trail System, historic maps, BLM and SHPO cultural resources records, and pertinent historic records/publications and maps to identify historic resources within the APE. The above list is not exclusive and should include other sources if identified by any Signatory Party.

F. The required identification activities shall be completed by Midway's consulting archaeologist or other qualified individuals as necessary. After all reasonable efforts have been made, if access cannot be obtained to private land and after consulting with BLM, Midway through its consulting archaeologist shall use existing data to determine the types of resources that might be present and anticipated effects. Upon BLM

determination that the intention of this section has been satisfied, the BLM Authorized Officer may issue a Notice to Proceed (NTP) for any construction segment as prescribed in Stipulation VII.

III. ELIGIBILITY

A. BLM, in consultation with SHPO and other consulting parties as necessary, shall evaluate all cultural resources recorded under this PA for eligibility to the NRHP based on an existing approved historic context or one that will be prepared.

B. BLM shall consult with the appropriate Tribes to evaluate the eligibility of properties of traditional religious and cultural importance within the APE.

C. A separate report will be prepared to document historic properties with standing architectural resources in order to expedite SHPO review.

D. To the extent practicable, NRHP eligibility determinations shall be based on documented inventory information and information provided by Tribes and other consulting parties. If the information gathered in the inventory, or in interviews with Tribes and other consulting parties, is inadequate to determine NRHP eligibility, Midway, through its consulting archaeologist, may be required to conduct limited subsurface testing or other evaluative techniques to determine eligibility. Subject to approval by BLM, in consultation with SHPO, evaluative testing for archaeological resources is intended to provide the minimum data necessary to define the nature, age, and distribution of materials in potential historic properties, to make final evaluations of eligibility, and to inform the development of a treatment plan should data recovery be deemed necessary. BLM requires Midway's consulting archaeologist be approved for a testing Cultural Resource Use Permit (CRUP) prior to subsurface probing, testing, data recovery or surface material collection.

E. If any of the Signatory Parties, Tribes, or consulting parties disagree regarding the eligibility of a cultural resource, the Signatory Parties shall work together with Tribes or consulting parties, when appropriate, to seek a resolution on the determination of eligibility. If the dispute cannot be resolved, BLM shall seek a formal determination of eligibility from the Keeper of the National Register in accordance with 36 C.F.R. § 63.2. The Keeper's determination will be considered final.

F. BLM shall determine, in consultation with Tribes or other consulting parties as necessary, the NRHP eligibility of all cultural resources that will be affected by Gold Rock Project activities prior to initiation. BLM will determine NRHP eligibility in a manner consistent with the Protocol. Cultural resources may remain unevaluated for the NRHP only with the approval by BLM in consultation with SHPO.

IV. TREATMENT

A. BLM shall ensure that Midway avoids adverse effects to historic properties, whenever reasonably practical, through project design, or redesign, relocation of facilities, or by other means in a manner consistent with the Protocol.

B. When avoidance is not practical and data recovery is proposed to lessen or mitigate project related adverse effects to historic properties eligible under criterion D, BLM, in consultation with the SHPO, shall ensure that Midway, through its consulting archaeologist, develops a Historic Properties Treatment Plan (Treatment Plan) that is consistent with the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716-37), *Treatment of Historic Properties: A Handbook* (Advisory Council on Historic Preservation 1980) and the ACHP's Recommended Approach for Consultation on the Recovery of Significant Information from Archaeological Sites dated June 17, 1999. The required mitigation activities shall be completed regardless of land ownership. BLM may but shall not be obligated to concurrently submit this document to other consulting parties, as BLM deems appropriate. These consulting parties shall have fifteen (15) days from their receipt to review the document. BLM will forward all comments received by consulting parties to the SHPO.

C. For properties eligible under criteria A through C, as defined in National Park Service Bulletin #36, mitigation other than data recovery may be considered (e.g., oral history, historic markers, exhibits, interpretive brochures or publications, etc.). When appropriate, the Treatment Plan shall include provisions (content and number of copies) for a publication for the general public.

D. BLM shall ensure that all records and materials resulting from identification and treatment efforts are curated in accordance with 36 C.F.R. § 79 in an approved curation facility in Nevada. As defined in the Native American Graves Protection and Repatriation Act (NAGPRA) materials will be handled in accordance with 43 C.F.R. § 10. All materials collected will be maintained in accordance with 36 C.F.R. § 79 or 43 C.F.R. § 10, until the final treatment report is complete and collections are curated and/or returned to their owners. Midway, or their contractor, shall provide proof of a current curation agreement to BLM within two (2) weeks of BLM acceptance of the final reports.

E. BLM shall ensure that all final archaeological reports resulting from actions pursuant to this PA will be provided to SHPO and Tribes or other interested persons as appropriate. All such reports shall be consistent with contemporary professional standards and the Secretary of Interior's Formal Standards for Final Reports of Data Recovery Programs (48 FR 447716-44740). Final reports will be submitted in both paper and electronic copies and will include digital copies of all associated data (e.g., GPS files, GIS data layers, digital photographs, etc.).

V. OTHER CONSIDERATIONS

A. Identification, evaluation, and treatment efforts may extend beyond the geographic limits of the APE when the resources being considered extend beyond the boundary of the construction activities. No identification, evaluation, or treatment efforts will occur beyond that necessary to complete the Section 106 process as agreed to in this PA.

B. Information on the location and nature of all cultural resources or information considered proprietary by a Tribe will be held confidential by the BLM to the extent provided by Federal and state law. BLM will not disseminate this information beyond what is required to complete the Section 106 process as agreed to in this PA.

VI. MONITORING

A. Any Signatory Party may monitor actions carried out pursuant to this PA. To the extent practicable, every effort will be made to minimize the number of monitors involved in the undertaking.

B. Any areas that BLM, in consultation with the SHPO, identifies as sensitive will be monitored during construction related activities by a qualified individual (Monitor). Monitors shall be empowered to stop work to protect resources if that work is inconsistent with the terms of this PA or any corresponding treatment or monitoring plan.

VII. NOTICES TO PROCEED (NTP)

BLM may issue a NTP to Midway for individual construction segments as defined by Midway in their Gold Rock Project plans, under any of the following conditions:

A. BLM, in consultation with SHPO, has determined that there are no cultural resources within the APE for that construction segment; or

B. BLM, in consultation with SHPO, has determined that there are no historic properties within the APE for the construction segment; or

C. BLM, after consultation with the SHPO and other consulting parties, has implemented an adequate Treatment Plan for the properties affected by the construction segment; and

1. Midway has posted a surety as set forth in Stipulation IX; and

2. The fieldwork phase of the treatment option has been completed; and

3. BLM has accepted a summary description of the fieldwork performed and a reporting schedule for that work; and

4. BLM shall provide an electronic copy of the summary to SHPO; and

5. SHPO will review the summary and if the SHPO concurs or does not respond within two working days of receipt, BLM shall assume concurrence and issue the NTP.

D. Midway shall not begin any ground disturbing activities within the boundary of any historic property until a NTP is issued for the property or construction segment encompassing that property.

VIII. TIME FRAMES

A. BLM will review and comment on any document submitted by Midway, through its consulting archaeologist, within thirty (30) calendar days of receipt.

B. BLM will submit the results of all identification, evaluation, effects assessments, treatment efforts, including discovery situations, and Treatment or Data Recovery Plans to the SHPO. The SHPO shall have thirty (30) calendar days from their receipt to review and comment on any submission.

C. A draft final report of all identification, evaluation and treatment activities will be due to BLM from Midway within nine (9) months after the completion of the fieldwork associated with the activity unless otherwise negotiated. Final reports will be due sixty (60) days after receiving BLM comments.

IX. SURETY BONDS

A. Based on a written detailed cost estimate submitted by the consulting archaeologist and agreed to by Midway and BLM, Midway will post a surety bond with BLM in an amount sufficient to cover all post-fieldwork costs associated with the inventory; implementing a Treatment Plan, Data Recovery Plan, or other cultural resource management activities. Such costs may include, but are not limited to post-fieldwork analyses, research and report preparation, interim and summary reports preparation, and the curation of project documentation and artifact collections in an approved curation facility. The surety shall be posted prior to BLM issuing any NTP. Additional surety bonds may be required by BLM to cover any of the issues associated with implementation of the PA.

B. The surety bond posted shall be subject to forfeiture if the post-fieldwork tasks are not completed within the time period established by the treatment option selected. BLM and Midway may agree to extend any such time periods. BLM will notify Midway in

writing that the surety is subject to forfeiture and shall allow Midway thirty (30) calendar days to respond before action is taken to forfeit the surety. If, during those thirty (30) days, Midway takes action to complete the post-fieldwork tasks, no action shall be taken to forfeit the bond.

C. The surety bond shall be released, in whole or in part, as specific post-fieldwork tasks, including final disposition of all collections, are completed and accepted by BLM.

X. POST-REVIEW DISCOVERY SITUATIONS

Stipulations of this PA and Protocol are intended to identify and mitigate adverse effects to historic properties. Unplanned discoveries of buried cultural resources are not anticipated, however if there is an unplanned discovery, the BLM will ensure that provisions in the Protocol (Section VI.B) and the following stipulations are met.

A. When previously unidentified cultural resources are discovered or an unanticipated impact situation occurs, all Gold Rock Project related activities within 100 meters of the discovery/impact will cease immediately. Midway, through its consulting archaeologist or its authorized representative, shall secure the location to prevent vandalism or other damage. Midway or its authorized representative shall immediately notify the BLM Authorized Officer of the discovery followed by written confirmation.

B. BLM will notify SHPO, Tribes, and other consulting parties as appropriate, within one (1) working day of being notified of the discovery or unanticipated impact, and consider their initial comments on the situation. Within two (2) working days after initial discovery, BLM will notify SHPO, Tribes, and other consulting parties as appropriate, of the decision to either allow Gold Rock Project activities to proceed or to require further evaluation and/or mitigation.

C. If, in consultation with SHPO, Tribes, and other consulting parties, BLM determines that mitigation for discoveries or unanticipated impacts is required, BLM shall solicit comments from SHPO, Tribes, and other consulting parties, as appropriate, to develop mitigating measures. BLM will afford SHPO, Tribes and other consulting parties, as appropriate, two (2) working days of receipt to provide BLM with comments to be considered when BLM decides on the nature and extent of mitigative efforts. Within seven (7) working days of initial SHPO notification, BLM will inform SHPO of the nature of the mitigation required. BLM will ensure that such mitigative actions are implemented before allowing Gold Rock Project activities to resume.

D. BLM shall ensure that reports of mitigation efforts for discoveries or unanticipated impacts are completed in a timely manner and conform to the Department of Interior's Formal Standards for Final Reports of Data Recovery Program (42 FR 5377-79). Drafts of such reports shall be submitted to the SHPO for a fifteen (15) day review and

comment period. Final reports shall be submitted to the SHPO, Tribes and consulting parties, as appropriate for information purposes.

E. Any disputes or objections arising during a discovery or unanticipated impact situation will follow the procedures in Stipulation XI.

F. Gold Rock Project activities in the area of the discovery or unanticipated impact will be halted until Midway is notified by the BLM Authorized Officer in writing that mitigation is complete and/or activities can resume.

XI. DISPUTE RESOLUTION

A. If any Signatory Party, Tribe, or other consulting party, objects to any activities proposed pursuant to the terms of this PA, BLM shall consult with the objecting party and SHPO to resolve the issue within thirty (30) days of receiving such objection.

B. A consulting party can request participation by the ACHP should consultation not resolve the issue.

C. If there is an objection by SHPO to the manner in which the terms of this PA are implemented, SHPO shall notify the Egan Field Manager in writing of the objection. BLM will consult with SHPO to resolve the objection. If BLM determines that the objection cannot be resolved, it shall request consultation by the BLM Nevada State Office to help resolve the objection. The BLM Nevada State Office shall have the authority to make the final decision in such dispute resolution.

D. For all post-review discovery disputes, the Egan Field Manager shall request consultation by the BLM Nevada State Office to help resolve the objection. The BLM Nevada State Office shall have seven (7) days to provide the Egan Field Manager with comments.

E. The Signatory Parties shall continue all actions under this PA that are not the subject of the dispute.

F. Nothing herein shall be construed to provide or create standing of any individuals who otherwise legally lack standing to raise any challenge or trigger dispute resolution.

XII. DURATION

This PA shall become effective on the date of the last Signatory Party's signature below and shall remain in effect for a period of ten years or until terminated as provided in Stipulation XIV. If the project has not been initiated within the ten year period, this PA will automatically terminate.

XIII. AMENDMENT

Any Signatory Party to this PA may request that this PA be amended, whereupon the Signatory Parties will consult to consider such amendment. The amendment will be effective on the date a copy signed by all of the Signatory Parties is filed with the ACHP.

XIV. TERMINATION

Any Signatory Party may initiate consultation for termination of this PA by providing written notice to the other Signatory Party. After notification by the initiating party, the other Signatory Party shall have thirty (30) calendar days to consult to seek agreement on amendments or any other actions that would address the issues and avoid termination. If such consultation fails, the termination will go into effect at the end of this thirty (30) calendar-day period, unless both parties agree to a longer period. The Signatory Parties shall be required to meet all current or outstanding obligations the Signatory Parties assumed under the terms of the PA. In the event that this PA is terminated, the BLM will comply with the provisions of the current Protocol and applicable NHPA regulations.

EXECUTION of this PA and implementation of its terms evidence that the BLM has taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

SIGNATORIES:

Jill A. Moore
Egan Field Manager — Date 1/15/14

Rebecca L. Palmer
Nevada State Historic Preservation Officer — Date 3/17/14

Concurring Parties:

Chairman
Duckwater Shoshone Tribe

Date

Chairman
Te-Moak Tribe of Western Shoshone

Date

6/10/2014

Tom Williams
Vice President of Environmental Affairs
Midway Gold US Inc.

Date

Mt. Wheeler Power Company
Jesse Murdock

Date

APPENDIX A

The Gold Rock Project APE is defined as the lands proposed for surface disturbance for mining operations and the construction of a transmission line and is depicted on the four attached maps. The Exploration APE for the Gold Rock Project encompasses a larger geographic area where Midway may conduct mineral exploration to identify additional ore bodies and is illustrated by the Plan of Operation boundary on Map 1.1-1. Midway will submit plans to BLM that will include the location of specific exploration area locations that will initiate the process described in Stipulations II through IV.

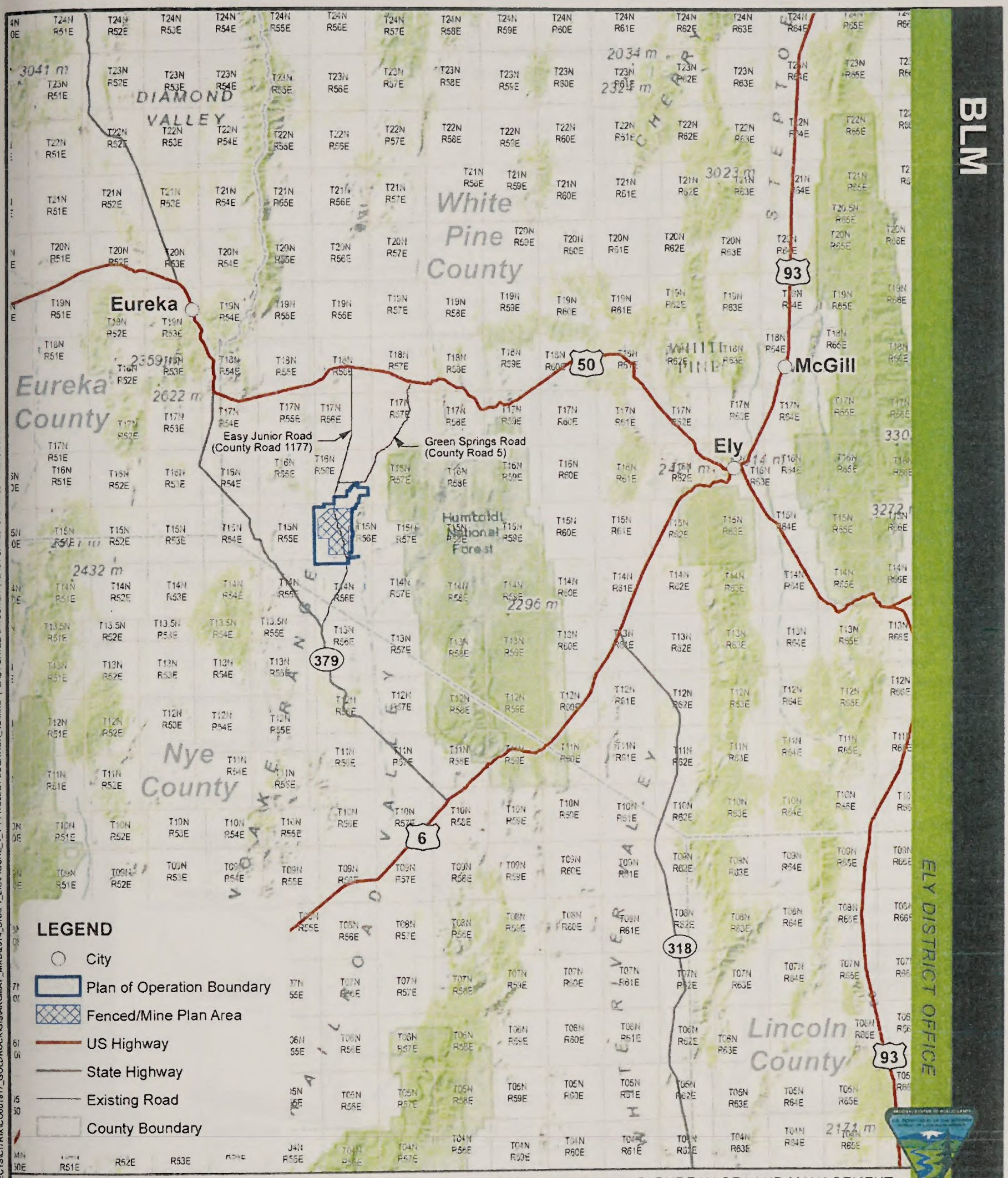

FIGURE 1.1-1
PROJECT LOCATION

MIDWAY GOLD US, INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 3/7/2014

0 7 14
MILES

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

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Basemap Source: ESRI Topographic Map Service

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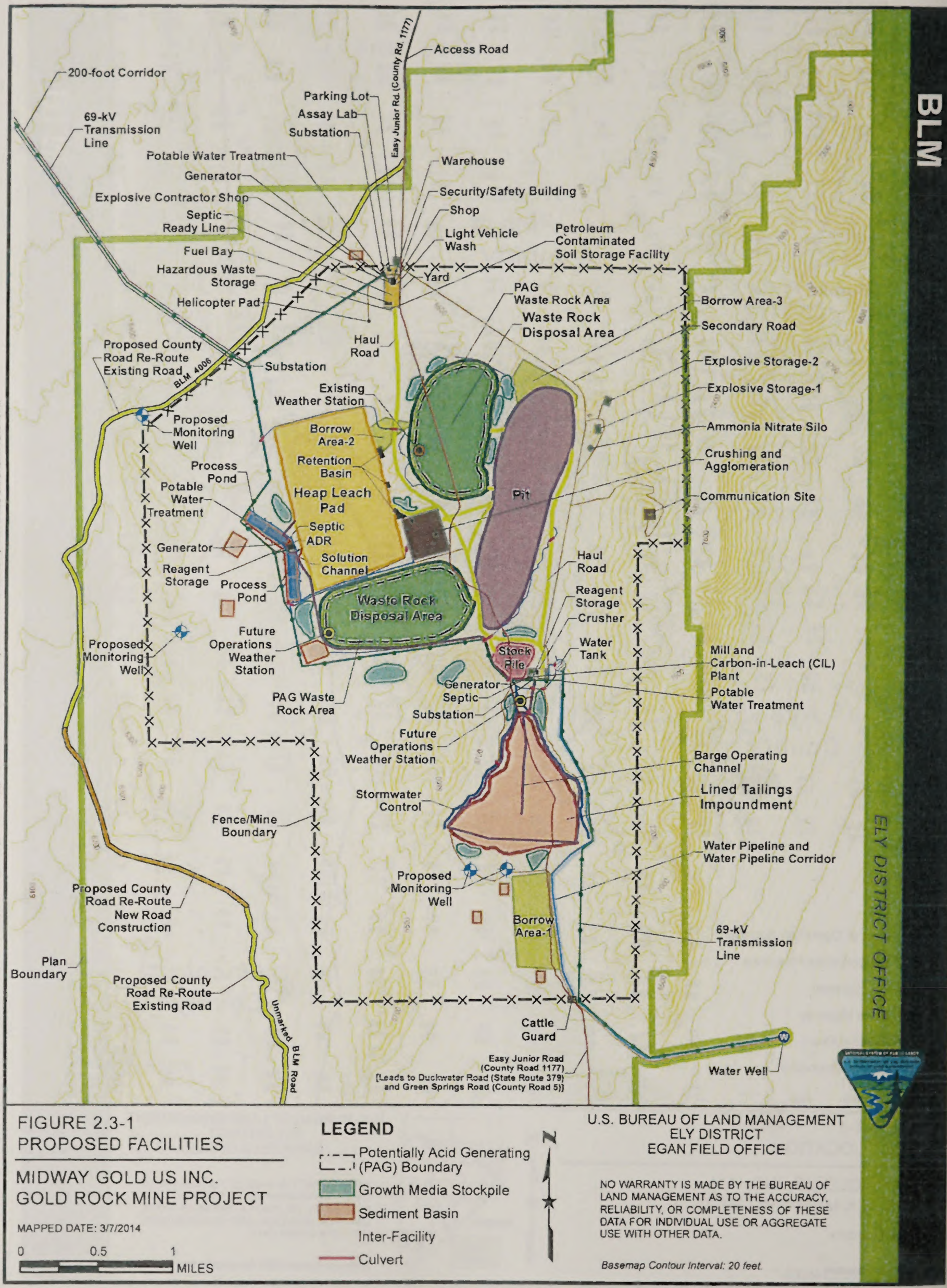

FIGURE 2.3-1
PROPOSED FACILITIES

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 3/7/2014

0 0.5 1 MILES

LEGEND

- Potentially Acid Generating (PAG) Boundary
- Growth Media Stockpile
- Sediment Basin
- Inter-Facility
- Culvert

N

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

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Basemap Contour Interval: 20 feet.

PATH: C:\USERS\JCHEN\DOCUMENTS_PROJECTS\CITRIX\C0001617_GOLDROCK\GIS\ARCMAP_MXD\2014_DRAFT_EIS\FIGURE_2_3-1 PROPOSED FACILITIES.MXD | LAST SAVED BY: JCHEN | LAST SAVED ON: 3/7/2014 12:16:48 PM

69-kV Transmission Line and Its 200-foot Corridor

Access Road

Easy Junior Road/ County Road 1177

Plan Boundary

BLM 4006

Waste Rock Disposal Area

Haul Road

Process Pond

Heap Leach Pad

Open Pit

Process Facility and Refinery

Haul Road

Mill and Carbon-in-Leach (CIL) Plant

Process Pond

Waste Rock Disposal Area

Fence/Mine Boundary

Tailings Storage Facility

Unmarked BLM Road

Easy Junior Road/ County Road 1177

To: Duckwater Road/ State Route 379 and Green Springs Road/ County Road 5

Ancillary Facilities:

- power supply;
- stormwater controls;
- reagent, fuel, and explosives storage;
- buildings including administration, laboratory, security, warehouse, coreshed, and parking;
- potable water supply and septic systems;
- maintenance shop;
- ready line;
- light vehicle wash;
- communications facilities;
- helicopter pad;
- growth media stockpiles;
- Class III-waivered landfill;
- area for petroleum contaminated soils storage prior to offsite disposal;
- monitoring wells;
- borrow areas;
- fencing;
- yards

NORTH

0 2,000 4,000 Feet

LEGEND

- WATER SUPPLY WELL
- PROPOSED MONITORING WELL
- PLAN BOUNDARY
- FENCE/MINE BOUNDARY
- POTENTIALLY ACID GENERATING WASTE ROCK BOUNDARY
- CULVERT
- CRUSHING FACILITY
- CRUSHING AND AGGLOMERATION
- YARD
- GROWTH MEDIA STOCKPILE
- STOCK PILE
- BORROW AREA
- SEDIMENT BASIN
- INTER-FACILITY
- PROPOSED COUNTY ROAD RE-ROUTE NEW ROAD CONSTRUCTION
- EXISTING BLM ROAD
- WATER PIPELINE
- BARGE OPERATING CHANNEL
- STORMWATER CONTROL
- SECONDARY ROAD

GOLD ROCK MINE PROJECT

Proposed Facilities

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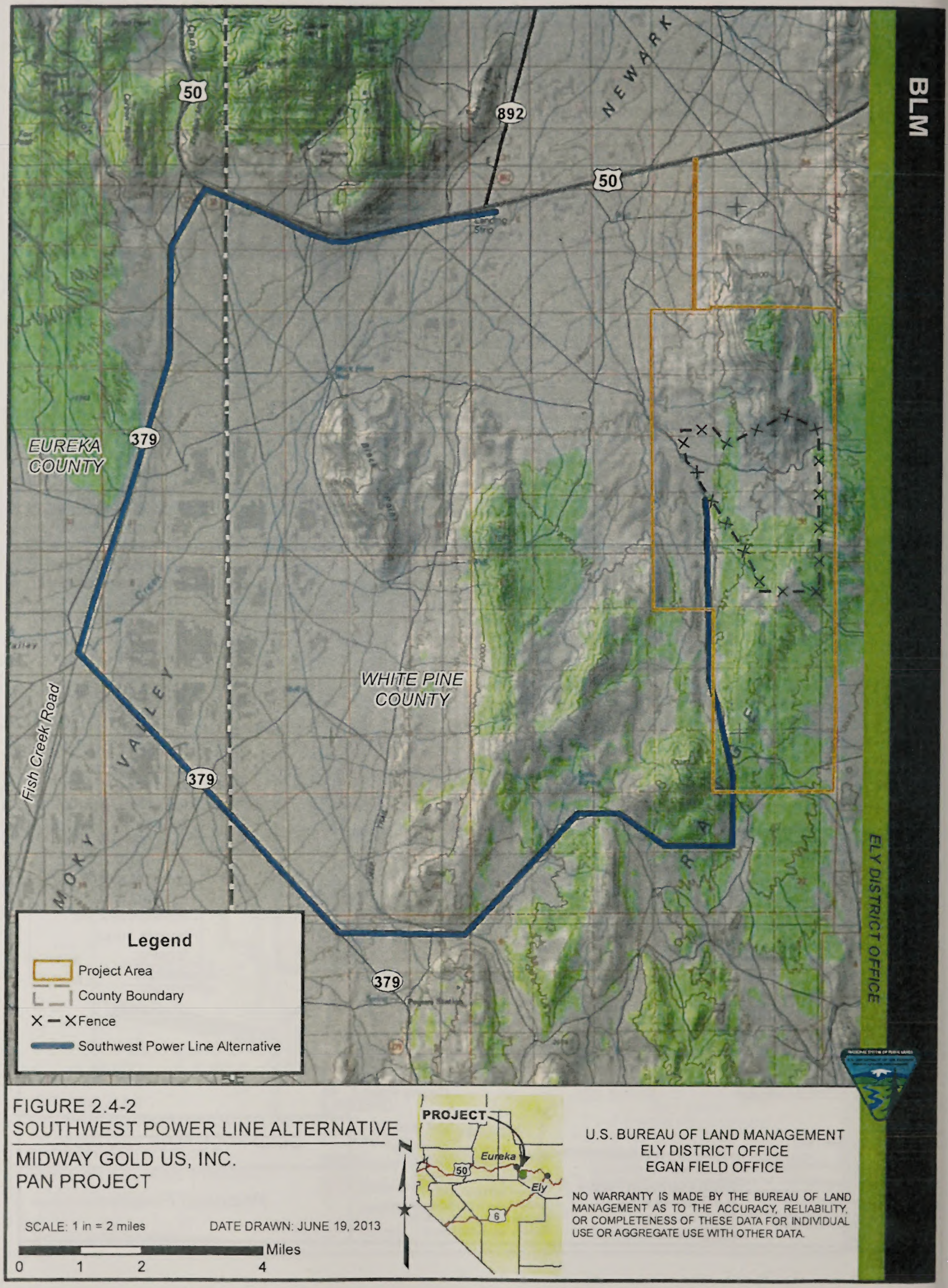

FIGURE 2.4-2
SOUTHWEST POWER LINE ALTERNATIVE

MIDWAY GOLD US, INC.
PAN PROJECT

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

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Appendix 1C

Example Table of Contents
for a Water Pollution Control Permit

EXAMPLE TABLE OF CONTENTS FOR A WATER POLLUTION CONTROL PERMIT APPLICATION

VOLUME 1 CORPORATE INFORMATION (NAC 445A.398.6)

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Appendix 2A

BLM Ely District Recommended
Bird Nest Buffer Sizes

BLM Ely District Recommended Bird Nest Buffer Sizes

Nest Buffer Sizes

The following buffer sizes for nests are recommended by the BLM Ely District. The type of disturbance, current life cycle of the birds (i.e. just started nest construction, incubating, chicks in nest, chicks ready to fledge), and habitat in the area (i.e. riparian area) may warrant adjustments to these recommended buffer sizes. With certain species, an increase in monitoring of the response of the nesting birds and their young to the disturbance may be allowed to reduce buffer sizes. Nests **will not** be marked with bright-colored flagging or anything that could attract predators to the nest. Nests **will not** be checked more than one time per week so as to not alert predators to nest locations.

The following process will be employed once nesting activity has been observed for this project area:

1) Activity will cease in the area until the chick(s) fledge, if this is not possible, see number 2 below.
2) The buffer specified in the table below will be adhered to until the chick(s) fledge, if this is not possible, see number 3 below.
3) The biological monitors will document the following information and submit it to the CICs. The information will then go to the BLM biologists and managers for approval:
    a) Give a detailed description of the nest, nesting activity, vegetation, pre-existing disturbances to the nest (i.e. proximity to roads, power poles, substations, etc.), monitoring information, and include a photo of the area.
    b) What action is proposed in an area smaller than the standard buffer? Be sure to include types of equipment, frequency, duration, and number of people.
    c) Is there a potential for screening the action from the birds, either auditory or visual (i.e. due to terrain, dense vegetation)?

Once the information is received, BLM biologists will make a recommendation to management to either approve or deny the request as presented.

Habitat	Common name	Scientific name	Buffer Size	time from eggs to fledging
sagebrush/salt desert scrub	Greater sage grouse	*Centrocercus urophasianus*	600 ft	25-27-days (eggs only)
open/grasslands	killdeer	*Charadrius vociferous*	300 ft	24-26 days (eggs only)
open/grasslands	long-billed curlew	*Numenius americanus*	300 ft	27-28 days (eggs only)
desert scrub	Gambel's quail	*Callipepla gambelii*	200 ft	31-34 days (eggs only)
generalist	Mourning dove	*Zenaida macroura*	200 ft	25-28 days
generalist	White-winged dove	*Zenaida asiatica*	200 ft	26-30 days
open/grasslands	common nighthawk	*Chordieles minor*	300 ft	39 days
woodlands	hummingbirds	*Many spp.*	200 ft	35-41 days
woodlands/cavity	Lewis's woodpecker	*Melanerpes lewis*	100 ft	43-45 days
woodlands/cavity	red-naped sapsucker	*Sphyrapicus nuchalis*	100 ft	39-40 days
woodlands/cavity	Williamson's sapsucker	*Sphyrapicus thyroideus*	100 ft	44 days
woodlands/cavity	hairy woodpecker	*Picoides villosus*	100 ft	39-45 days
woodlands/cavity	Ladder-backed woodpecker	*Picoides scalaris*	100 ft	34-39 days
woodlands/cavity	northern flicker	*Colaptes arcticus*	100 ft	28-31 days
P/J or sagebrush	gray flycatcher	*Empidonax wrightii*	200 ft	30 days
cliffs	black phoebe	*Sayornis nigricans*	200 ft	32-39 days
cliffs	Say's phoebe	*Sayornis saya*	200 ft	26-30 days
woodlands	vermilion flycatcher	*Pyrocephalus rubinus*	200 ft	28-31 days
open/trees	western kingbird	*Tyrannus verticalis*	200 ft	28-31 days
open/cavity/trees	Ash-throated flycatcher	*Myiarchus cinerascens*	100 ft	31-32 days
tree/scrub	Phainopepla	*Phainopepla nitens*	200 ft	32-34 days
cliff/tree/cavity	Violet-green swallow	*Tachycineta thalassina*	100 ft	33-40 days
tree/cavity	Tree swallow	*Tachycineta bicolor*	100 ft	29-40 days
burrows	Northern rough-winged swallow	*Stelgidopteryx serripennis*	100 ft	32-37 days
woodlands	Blue-gray gnatcatcher	*Polioptila caerulea*	200 ft	27-28 days
woodlands	Black-tailed gnatcatcher	*Polioptila melanura*	200 ft	23-29 days

Habitat	Common name	Scientific name	Buffer Size	time from eggs to fledging
woodlands/yucca	Scott's oriole	*Icterus parisorum*	200 ft	28 days
open woodlands	Bullock's oriole	*Icterus bullockii*	200 ft	28 days
open/scrub	horned lark	*Eremophila alpestris*	300 ft	22-31 days
woodlands	western scrub-jay	*Aphelocoma californica*	200 ft	33-35 days
woodlands	pinyon jay	*Gymnorhinus cyanocephalus*	200 ft	38 days
woodlands	Clark's nutcracker	*Nucifraga Columbiana*	200 ft	38-40 days
scrub woods	black-billed magpie	*Pica pica*	200 ft	39-50 days
woods	American crow	*Corvus brachyrhynchos*	200 ft	30-40 days
cliffs/trees	common raven	*Corvus corax*	200 ft*	55-63 days
tree/cavity	juniper titmouse	*Parus inornatus ridgwayi*	100 ft	31-33 days
scrub	verdin	*Auriparus flaviceps*	300 ft	35 days
woodlands	bushtit	*Psaltriparus minimus*	200 ft	26-28 days
scrub	cactus wren	*Campylorhynchus brunneicapillus*	300 ft	36-39 days
rock outcrops	rock wren	*Salpinctes obsoletus*	300 ft	26-30 days
rock outcrops	canyon wren	*Catherpes mexicanus*	300 ft	27-33 days
woodlands/cavity	Bewick's wren	*Thryomanes bewickii*	200 ft	28 days
woodlands/cavity	mountain bluebird	*Sialia currucoides*	100 ft	31-35 days
woodlands/cavity	Townsend's solitaire	*Myadestes townsendii*	100 ft	25 days
woodlands	northern mockingbird	*Mimus polyglottos*	200 ft	23-28 days
sagebrush	sage thrasher	*Oreoscoptes montanus*	300 ft	26-29 days
scrub	Bendire's thrasher	*Toxostoma bendirei*	300 ft	28 days
scrub	Crissal thrasher	*Toxostoma crissale*	300 ft	25-26 days
tree in scrub	loggerhead shrike	*Lanius ludovicianus*	300 ft	31-37 days
woodlands	gray vireo	*Vireo vicinior*	200 ft	26-28 days
Ground	Virginia's warbler	*Vermivora virginae*	300 ft	23-26 days
woodlands/cavity sensitive	Lucy's warbler	*Vermivora luciae*	300 ft	23 days
woodlands	yellow-rumped warbler	*Dendroica coronate auduboni*	200 ft	24-27 days
Scrub	MacGillivray's warbler	*Opornis tolmei*	300 ft	19-23 days

Habitat	Common name	Scientific name	Buffer Size	time from eggs to fledging
Ground	Wilson's warbler	*Wilsonia pusilla*	300 ft	21-24 days
Scrub	yellow-breasted chat	*Cteria virens*	300 ft	19-23 days
woodlands	western tanager	*Piranga ludoviciana*	200 ft	23-24 days
Scrub	pyrrhuloxia	*Cardinalis sinuatus*	200 ft	24 days
Scrub	lazuli bunting	*Passerina amoena*	300 ft	22-27 days
Scrub	green-tailed towhee	*Pipilo chlorus*	300 ft	23-24 days
Scrub	spotted towhee	*Pipila maculatus*	300 ft	21-22?days
Scrub	Abert's towhee	*Pipila aberti*	300 ft	25-27 days
woodlands	chipping sparrow	*Spizella passerine*	200 ft	20-26 days
sagebrush	Brewer's sparrow	*Spizella breweri*	300 ft	19-22 days
sagebrush	black-chinned sparrow	*Spizella atrogularis*	300 ft	23 days
sagebrush	vesper sparrow	*Pooecetes gramineus*	300 ft	31-35 days
Scrub	lark sparrow	*Chondestes grammacus*	300 ft	20-33 days
sagebrush	black-throated sparrow	*Amphispiza bilineata*	300 ft	22 days
sagebrush	sage sparrow	*Amphispiza belli*	300 ft	22-26 days
sagebrush	western meadowlark	*Sturnella neglecta*	300 ft	37-41 days
woodlands	Brewer's blackbird	*Euphagus cyanocephalus*	200 ft	25-26 days
Alpine	black rosy-finch	*Leucosticte atratus*	200 ft	32-34 days
woodlands	Cassin's finch	*Carpodacus cassinii*	200 ft	26-28 days
woodlands	red crossbill	*Loxia curvirostra*	200 ft	30-38 days
woodlands	lesser goldfinch	*Cardeulis psaltria*	200 ft	33 days
woodlands	evening grosbeak	*Coccothraustes vespertinus*	200 ft	25-28 days
ledge or cavity	House finch	*Carpodacus mexicanus*	100 ft	23-33 days

* = nest may be removed with FWS depredation permit

References

Baicich. Paul J. and Colin J. O. Harrison. 1997. A Guide to the Nests, Eggs, and Nestlings of North American Birds.

CalPIF (California Partners in Flight). 2009. Version 1.0. The Desert Bird Conservation Plan: a Strategy for Protecting and Managing Desert Habitats and Associated Birds in California. California Partners in Flight. http://www.prbo.org/calpif/plans.html

Ehrlich, Paul R., David S. Dobkin, and Darryl Wheye. 1988. The Birder's Handbook. Simon and Schuster/ Fireside Books. New York, New York.

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Appendix 3A

Nevada Division of Water Resources Water Rights Database Records

Nevada Division of Water Rights Database, Hydrographic Abstract Advanced Search, Basin 173B Railroad Valley/Northern Part

Basin	App	Change App.	Cert	File Date	Status[1]	Source[2]	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units[3]	County	Owner of Record
173B	10039			10/15/1936	CAN	STR		N2	35	11N	58E	0	PWR		10/15/1936	0		NY	MANZONI, JOHN
173B	10200	9586	2760	1/26/1938	CER	STR	SE	SW	28	06N	57E	0.111	MM		4/9/1932	80.344	AFA	NY	HAFEN, JOSEPH
173B	1033			6/29/1908	CAN	STR				06N	57E	0	IRR		6/29/1908	0		NY	QUINN, HARRY
173B	1034			6/29/1908	CAN	STR				06N	57E	0	IRR		6/29/1908	0		NY	WEAL, HUGH
173B	10496			4/25/1940	WDR	SPR	SE	NW	16	11N	59E	0	MM		4/25/1940	0		NY	CURRENT CREEK MINING CO.
173B	10499			5/2/1940	WDR	SPR	SW	NW	16	11N	58E	0	DOM		5/2/1940	0		NY	U.S.-FOREST SERVICE
173B	10507		3273	5/18/1940	CER	STR	SW	SE	14	04N	55E	0.785	IRR		5/18/1940	567.32	AFA	NY	CROSS L. RANCHES LLC
173B	10547			8/9/1940	CAN	SPR		SE	9	06N	57E	0	MM		8/9/1940	0		NY	IRWIN, PAUL
173B	10601		3062	11/29/1940	CER	STR	SE	SW	27	06N	57E	0.5	MM		11/29/1940	361.88	AFA	NY	OLD ENGLISH GOLD CORPORATION
173B	10622			2/18/1941	WDR	RES				05N	54E	1	STK		2/18/1941			NY	SHARP, HOWARD N.
173B	10835		3046	6/11/1942	CER	STR	SE	NE	30	06N	57E	0.001	STK		6/11/1942	0.4603	AFA	NY	CROSS L. RANCHES, LLC
173B	10836		3047	6/11/1942	CER	SPR	SE	SE	14	06N	56E	0.003	STK		6/11/1942	2.2403	AFA	NY	CROSS L. RANCHES, LLC
173B	10837			6/11/1942	DEN	SPR	SE	SW	19	03N	55E	0	STK		6/11/1942	0	AFA	NY	BUCK HORN CATTLE COMPANY
173B	10866		3039	9/19/1942	CER	STR	SE	NE	28	04N	55E	0.016	STK		9/19/1942	11.201	AFA	NY	MESQUITE LAND CO.
173B	1089			8/13/1908	WDR	STR				15N	57E	5	IRR		8/13/1908	0		WP	EUREKA LIVESTOCK CO.
173B	10955		4104	5/10/1943	CER	STR	SE	NE	28	04N	55E	1	IRD		5/10/1943	269	AFA	NY	SHARP, NORMAN K.
173B	11037		2909	12/10/1943	CER	STR	NE	SW	3	03N	52E	0.003	STK		12/10/1943	2.1789	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983 TRUST
173B	11136			6/27/1944	WDR	SPR						0.5	DOM		6/27/1944	0		NY	NEVADA-DEPARTMENT OF TRANSPORTATION
173B	1118			9/5/1908	CAN	STR		NE	35	05N	56E	0	IRR		9/5/1908	0		NY	MORGAN, W.C.
173B	11199		3429	11/10/1944	CER	SPR	NE	SW	9	03N	55E	0.003	STK		11/10/1944	2.2403	AFA	NY	CROSS L. RANCHES, LLC
173B	11200		3085	11/10/1944	CER	OSW	NW	NE	24	05N	54E	0.007	STK		11/10/1944	5.5854	AFA	NY	CROSS L. RANCHES, LLC
173B	11201		3348	11/10/1944	CER	UG	NW	SW	17	04N	54E	0.015	STK		11/10/1944	11.201	AFA	NY	CROSS L. RANCHES, LLC
173B	11202			11/10/1944	ABR	STR	SE	NE	30	06N	57E	0	IRR		11/10/1944	0	AFS	NY	BORDOLI, A.F.
173B	11202	CHANGED BY:	13004		CER	STR													
173B	11232		3011	1/10/1945	CER	STR	SE	NE	30	06N	57E	1.07	IRR		1/10/1945	449.14	AFA	NY	CROSS L. RANCHES LLC
173B	11256			3/31/1945	DEN	UG	SE	SW	12	03N	54E	0.25	STK		3/31/1945	12.889	AFA	NY	LAMB, SHELDON
173B	11467		3383	12/21/1945	CER	STR	NE	SW	3	03N	52E	0.032	STK		12/21/1945	22.955	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983 TRUST
173B	11468			12/21/1945	CAN	STR	SE	NE	30	06N	57E	0	PWR		12/21/1945	0		NY	STEELE, ROSS F.
173B	11545		4798	4/9/1946	CER	STR	SW	SE	14	04N	55E	7	IRR		4/9/1946	640	AFA	NY	CROSS L. RANCHES LLC
173B	11545	CHANGED BY:	17516		WDR	STR													
173B	11568			5/3/1946	DEN	UG	SW	NW	12	03N	54E	0	STK		5/3/1946	0	AFA	NY	LAMB, SHELDON
173B	1169			11/5/1908	CAN	SPR	SE	SE	29	13N	55E	0	STK		11/5/1908	0		NY	TOGNONI, JOSEPH C.
173B	1170			11/5/1908	CAN	SPR	NE	NE	9	12N	55E	0	STK		11/5/1908	0		NY	TOGNONI, JOSEPH C.
173B	11701		3103	10/5/1946	CER	STR	NE	NE	31	04N	53E	0.032	STK		10/5/1946	22.833	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983 TRUST
173B	11714	DDUCKWCR	3036	11/2/1946	CER	STR	SW	NE	28	12N	56E	1.19	IRR		01/01/1868	320	AFA	NY	HALSTED-FORSGREN RANCHES INC.
173B	11753		3104	1/15/1947	CER	STR	NE	SW	3	03N	52E	0.032	STK		1/15/1947	22.955	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983 TRUST
173B	1177			11/7/1908	CAN	STR	SE	SE	31	05N	56E	0	IRR		11/7/1908	0		NY	CHRISTIAN, RALPH
173B	1178		48	11/7/1908	CER	STR		NW	29	04N	55E	0.3	IRR		11/7/1908	90	AFA	NY	CROSS L. RANCHES, LLC
173B	11787	2902		2/24/1947	DEN	SPR	NE	NE	25	03N	54E	0	STK		3/5/1914	0	AFA	NY	SHARP, H.N.
173B	1179			11/7/1908	CAN	STR	NW	NE	10	06N	57E	0	IRR		11/7/1908	0	AFA	NY	WEAL, HUGH
173B	11829		3445	4/12/1947	CER	STR	SE	SW	27	06N	57E	0.85	PWR		4/12/1947	0	AFA	NY	OLD ENGLISH GOLD CORPORATION
173B	1183			11/12/1908	CAN	STR		SE	4	10N	58E	0	IRR		11/12/1908	0		NY	CALLAWAY, FRANK
173B	11926		3845	7/24/1947	CER	UG	NE	SE	34	06N	54E	0.001	STK		7/24/1947	0.7365	AFA	NY	GRUBE, B.H.
173B	11927		3846	7/24/1947	CER	UG	SE	NE	29	09N	56E	0.001	STK		7/24/1947	0.3069	AFA	NY	GRUBE, B.H.
173B	11977			8/26/1947	DEN	SPR	SE	SE	25	10N	54E	0	STK		8/26/1947	0	AFA	NY	LOCKE, MADISON
173B	1227			12/28/1908	DEN	SPR				12N	56E	0	IRR		12/28/1908	0	AFA	NY	WILLIAMS, CHARLES W.
173B	12382			3/26/1948	CAN	SPR	NE	NW	28	08N	58E	0	STK		3/26/1948	0	AFA	NY	GARRETT, EMORY
173B	12383			3/26/1948	CAN	SPR	SE	SE	27	07N	58E	0	STK		3/26/1948	0	AFA	NY	GARRETT, EMORY
173B	12529		4050	7/8/1948	CER	SPR	NE	SE	25	03N	54E	0.016	STK		7/8/1948	11.416	AFA	NY	CROSS L. RANCHES, LLC
173B	12578			8/17/1948	WDR	OSW	NE	NE	12	05N	52E	0	STK		8/17/1948	0	AFA	NY	FALLINI BROTHERS
173B	12596			8/23/1948	DEN	UG	NW	SW	5	03N	54E	1	STK		8/23/1948	11.416	AFA	NY	SHARP, H.N.
173B	1262			1/25/1909	DEN	STR	SW	NW	34	12N	56E	0	IRR		1/25/1909	0	AFA	NY	TOGNONI, J.R.
173B	1263			1/25/1909	DEN	SPR				12N	56E	0	IRR		1/25/1909	0	AFA	NY	COLLINS, J.
173B	12665		4162	10/2/1948	CER	SPR	SE	NE	2	08N	58E	0.011	STK		10/2/1948	7.8257	AFA	NY	SHARP, HOWARD
173B	12666		4163	10/2/1948	CER	SPR	SW	SE	21	08N	58E	0.011	STK		10/2/1948	7.8257	AFA	NY	SHARP, HOWARD

Nevada Division of Water Rights Database, Hydrographic Abstract Advanced Search, Basin 173B Railroad Valley/Northern Part

Basin	App	Change App.	Cert	File Date	Status[1]	Source[2]	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units[3]	County	Owner of Record
173B	12667		4164	10/2/1948	CER	SPR	SW	NW	36	08N	58E	0.011	STK		10/2/1948	7.8257	AFA	NY	SHARP, HOWARD
173B	12668		4165	10/2/1948	CER	SPR	NW	SW	18	07N	59E	0.011	STK		10/2/1948	7.8257	AFA	NY	SHARP, HOWARD
173B	12669		4166	10/2/1948	CER	SPR	SW	SE	9	08N	58E	0.011	STK		10/2/1948	7.8257	AFA	NY	SHARP, HOWARD
173B	1269			1/29/1909	CAN	SPR				03N	55E	0	STK		1/29/1909	0		NY	HORTON, ANNIE (MRS.)
173B	12716			11/6/1948	WDR	SPR	SE	SE	27	07N	58E	0	STK		11/6/1948	0	AFA	NY	GARRETT, EMORY
173B	12717			11/6/1948	CAN	SPR	NE	NW	28	08N	58E	0	STK		11/6/1948	0	AFA	NY	GARRETT, EMORY
173B	12738		3893	11/26/1948	CER	UG	NW	SE	34	05N	54E	0.011	STK		11/26/1948	5.9844	AFA	NY	CROSS L. RANCHES, LLC
173B	12739			11/26/1948	CAN	STR	SW	NW	36	05N	53E	0	STK		11/26/1948	0	AFA	NY	BORDOLI, A F
173B	12757			12/7/1948	CAN	SPR	SW	SE	19	05N	53E	0	STK		12/7/1948	0	AFA	NY	BORDOLI, A F
173B	12758			12/7/1948	CAN	STR	NE	NW	32	05N	53E	0	STK		12/7/1948	0	AFA	NY	BORDOLI, A F
173B	1279			2/4/1909	CAN	SPR	SE	SE	11	08N	57E	0	IRR		2/4/1909	0		NY	HORTON, ANNIE (MRS.)
173B	12847			3/11/1949	WDR	STR	NW	SE	36	16N	57E	0.04	MM		3/11/1949	0		WP	FLOYD, PAUL H.
173B	13004	11202	3902	8/4/1949	CER	STR	SE	NE	30	06N	57E	0.5	IRR		11/10/1944	330	AFA	NY	CROSS L. RANCHES LLC
173B	13053			9/26/1949	CAN	SPR	NE	NW	28	08N	58E	0	STK		9/26/1949	0	AFA	NY	GARRETT, EMERY
173B	1310			2/23/1909	CAN	SPR			13	13N	57E	0	STK		2/23/1909	0		WP	ROSEVAR, JOHN H.
173B	1311			2/23/1909	CAN	SPR				14N	57E	0	STK		2/23/1909	0		WP	ROSEREAR, JOHN H.
173B	1312			3/1/1909	CAN	STR		NW	5	12N	56E	0	IRR		3/1/1909	0		NY	TOGNONI, J.C.
173B	1313			3/1/1909	CAN	SPR				11N	56E	0	STK		3/1/1909	0		NY	TOGNONI, J.C.
173B	1354			5/13/1909	CAN	SPR				10N	59E	0	DOM		5/13/1909	0		NY	STRAUSS, WM. A.
173B	1355			5/15/1909	CAN	STR			1	11N	57E	0	IRR		5/15/1909	0		NY	WESTERN DEVELOPING CO
173B	13583			12/29/1950	DEN	STR	SW	NE	28	12N	56E	3.4	IRR		12/29/1950	1360	AFS	NY	RUSSELL, DANIEL H.
173B	13671		4330	4/5/1951	CER	STR	SE	SW	34	12N	56E	3	IRR		4/5/1951	703.4	AFA	NY	NORMA J. BRADSHAW (40%), KARL TODD BRADSHAW (UNDIV.20%), JODY MAE BRADSHAW (UNDIV.20%), NORMA J. BRADSHAW (UNDIV.20%)
173B	13682			4/16/1951	ABR	STR	NW	NW	27	12N	56E	0	STK		4/16/1951	0	AFA	NY	HALSTEAD, E.D.
173B	13682	CHANGED BY:	29123		CER	STR													
173B	13828			9/10/1951	CAN	UG	NW	NW	32	10N	57E	0	IRR		9/10/1951	0	AFA	NY	MANZONIE, JOHN
173B	13829			9/10/1951	CAN	OSW	SE	SE	30	10N	57E	0	IRR		9/10/1951	0	AFA	NY	MANZONIE, DELLIE
173B	13839			9/14/1951	CAN	SPR	SW	SW	8	10N	56E	0	STK		9/14/1951	0		NY	MANZONIE, DELLIE
173B	13840			9/14/1951	CAN	UG		N2	7	09N	57E	0	IRR		9/14/1951	0	AFA	NY	YOUNG, E.K.
173B	13841			9/14/1951	WDR	UG	NE	SE	8	09N	57E	0	IRR		9/14/1951	0		NY	WILHOITE, AVENELL
173B	13917			11/19/1951	CAN	SPR	NE	SE	8	09N	57E	0	STK		11/19/1951	0	AFA	NY	SHARP, HOWARD
173B	13918			11/19/1951	CAN	SPR	NW	NE	14	09N	56E	0.025	STK		11/19/1951	9.5136	AFA	NY	SHARP, HOWARD
173B	13998		4090	1/17/1952	CER	UG	SW	NE	24	08N	55E	0.3	REC		1/17/1952	217.19	AFA	NY	NEVADA-DEPARTMENT OF WILDLIFE
173B	13999		4447	1/17/1952	CER	OSW	NW	NE	23	08N	55E	1.12	REC		1/17/1952	0	AFA	NY	NEVADA-DEPARTMENT OF WILDLIFE
173B	14000		4091	1/17/1952	CER	UG	NE	SE	2	08N	56E	0.51	REC		1/17/1952	362.13	AFA	NY	NEVADA-DEPARTMENT OF WILDLIFE
173B	14001		4092	1/17/1952	CER	UG	SW	NW	2	08N	56E	0.43	REC		1/17/1952	311.31	AFA	NY	NEVADA-DEPARTMENT OF WILDLIFE
173B	14002		4093	1/17/1952	CER	UG	SW	NE	3	08N	56E	0.32	REC		1/17/1952	231.67	AFA	NY	NEVADA-DEPARTMENT OF WILDLIFE
173B	14003		4094	1/17/1952	CER	UG	NE	SW	34	09N	56E	0.28	REC		1/17/1952	202.73	AFA	NY	NEVADA-DEPARTMENT OF WILDLIFE
173B	14004		9736	1/17/1952	CER	UG	SW	NE	5	06N	56E	0.5	REC		1/17/1952	361.99	AFA	NY	NEVADA-DEPARTMENT OF WILDLIFE
173B	14005		4095	1/17/1952	CER	UG	SW	NE	4	08N	57E	0.354	REC		1/17/1952	256.28	AFA	NY	NEVADA-DEPARTMENT OF WILDLIFE
173B	14302			5/19/1952	WDR	RES	SW	SW	33	15N	57E	0	STO		5/19/1952	0	AFS	WP	HALSTEAD, BEATRICE MRS.
173B	14308			5/26/1952	WDR	UG	SE	NW	4	09N	57E	0	IRD		5/26/1952	0		NY	VORPAHL, WELDON
173B	14309			5/26/1952	CAN	UG	NE	NW	5	09N	57E	0	IRD		5/26/1952	0		NY	HICKMAN, MRS. LILA ELLEN
173B	14334			6/18/1952	CAN	UG	NW	SE	5	09N	57E	0	IRD		6/18/1952	0		NY	VORPAHL, BARBARA S
173B	14335			6/18/1952	WDR	UG	SE	NE	4	09N	57E	0	IRD		6/18/1952	0		NY	SCHOFIELD, JACK L
173B	14336			6/18/1952	WDR	UG	NW	SE	18	09N	57E	0	IRD		6/18/1952	0		NY	MATHEWS, MARTHA L.
173B	14350			6/25/1952	WDR	UG	NE	NE	31	10N	57E	6.4	IRD		6/25/1952	1280	AFA	NY	WOTKYNS, ELIZABETH A.
173B	14351			6/25/1952	WDR	UG	NW	SE	31	09N	57E	0	IRD		6/25/1952	0		NY	SIM, WALTER N.
173B	14352			6/25/1952	CAN	UG	NE	NE	8	09N	57E	0	IRD		6/25/1952	0		NY	MILLER, HENRIETTA E.
173B	14353			6/25/1952	WDR	UG	NW	NE	12	09N	56E	0	IRD		6/25/1952	0		NY	JACOBSON, HAVEN E.
173B	14354			6/25/1952	WDR	UG	NW	SW	33	10N	57E	0	IRD		6/25/1952	0		NY	HILLYARD, GRACE S.
173B	14355			6/25/1952	WDR	UG	NW	NE	13	09N	56E	0	IRD		6/25/1952	0		NY	HAGSTROM, EVELYN O.
173B	14356			6/25/1952	WDR	UG	NW	NW	33	10N	57E	0	IRD		6/25/1952	0		NY	HILLYARD, THOMAS E.
173B	14357			6/25/1952	WDR	UG		LT02	1	09N	56E	0	IRD		6/25/1952	0		NY	MATHEWS, ALONZO R.
173B	14358			6/25/1952	WDR	UG	NE	NE	36	10N	56E	0	IRD		6/25/1952	0		NY	SCOHFIELD, THOMAS
173B	14359			6/25/1952	CAN	UG	NW	SW	28	10N	57E	6.4	IRD		6/25/1952	1280	AFS	NY	HARRIS, THOMAS R.
173B	14371			6/27/1952	WDR	UG	NW	SW	29	10N	57E	0	IRD		6/27/1952	0	AFS	NY	STEWART, MARCIA

Nevada Division of Water Rights Database, Hydrographic Abstract Advanced Search, Basin 173B Railroad Valley/Northern Part

Basin	App	Change App.	Cert	File Date	Status[1]	Source[2]	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units[3]	County	Owner of Record
173B	14372			6/27/1952	WDR	UG	NW	NW	12	09N	56E	0	IRD		6/27/1952	0		NY	WILLIAMS, NEVA E.
173B	14373			6/27/1952	WDR	UG	NW	NW	18	09N	57E	0	IRD		6/27/1952	0		NY	WEGGE, WILLIAM A. JR.
173B	14374			6/27/1952	WDR	UG	NW	NW	30	10N	57E	0	IRD		6/27/1952	0	AFS	NY	STEWART, HUBERT
173B	14375			6/27/1952	WDR	UG	NW	NW	8	09N	57E	0	IRD		6/27/1952	0		NY	WILLIAMSON, VEDA MRS.
173B	14376			6/27/1952	WDR	UG	NE	NE	30	10N	57E	0	IRD		6/27/1952	0	AFS	NY	DOW, MARY ELLA
173B	14382			7/1/1952	WDR	UG	NW	NW	12	09N	56E	6.4	IRD		7/1/1952			NY	TWOMEY, JAMES F.
173B	14383			7/1/1952	WDR	UG	NW	NE	36	10N	56E	6.4	IRD		7/1/1952			NY	MACLEOD, ROBERT K.
173B	14384			7/1/1952	WDR	UG	NE	NE	28	10N	57E	0	IRD		7/1/1952	0	AFS	NY	WRIGHT, LAWRENCE A.
173B	14385			7/1/1952	WDR	UG	NE	NW	21	10N	57E	0	IRD		7/1/1952	0	AFS	NY	WRIGHT, HELEN E.
173B	14386			7/1/1952	CAN	UG	NW	SW	19	10N	57E	0	IRD		7/1/1952	0	AFS	NY	GARDNER, CLYDE WAYNE
173B	14387			7/1/1952	CAN	UG	NW	NW	19	10N	57E	6.4	IRD		7/1/1952	1280	AFS	NY	GARDNER, AFTON
173B	14388			7/1/1952	WDR	UG	NW	SW	18	10N	57E	0	IRD		7/1/1952	0	AFS	NY	GARDNER, MARY ETHEL
173B	14389			7/1/1952	WDR	UG	NW	NE	23	09N	57E	6.4	IRD		7/1/1952			NY	READ, OLLIE R.
173B	14390			7/1/1952	WDR	UG	NE	NE	32	10N	57E	6.4	IRD		7/1/1952	1280	AFS	NY	WILLIAMS, WILLIAM C.
173B	14391			7/1/1952	WDR	UG	NE	NE	29	10N	57E	0	IRD		7/1/1952	0	AFS	NY	WILLIAMS, MARY L.
173B	14392			7/1/1952	WDR	UG	NE	NE	20	10N	57E	0	IRD		7/1/1952	0	AFS	NY	COOK, GRANT
173B	14393			7/1/1952	WDR	UG	NW	SW	20	10N	57E	6.4	IRR		7/1/1952	1280	AFS	NY	WALLACE, MILTON K.
173B	14394			7/1/1952	WDR	UG	NW	NW	17	10N	57E	0	IRD		7/1/1952	0	AFS	NY	WILLIAMS, SIMONA P.
173B	14395			7/1/1952	WDR	UG	NW	NW	25	10N	56E	0	IRD		7/1/1952	0		NY	ZINNI, ANTHONY E.
173B	14396			7/1/1952	WDR	UG	NW	SW	25	10N	56E	0	IRD		7/1/1952	0		NY	ZINNI, EVELYN E.
173B	14397			7/1/1952	WDR	UG	NW	NW	24	09N	56E	0	IRR		7/1/1952	0		NY	UDALL, THOMAS
173B	14398			7/3/1952	WDR	UG	NW	SW	17	10N	57E	6.4	IRD		7/3/1952			NY	WALLACE, MILTON K.
173B	14399			7/3/1952	WDR	UG	NW	SW	20	10N	57E	6.4	IRD		7/3/1952	1280	AFS	NY	WILLIAMS, MARY L.
173B	14411			7/7/1952	WDR	UG	NW	NE	36	10N	56E	0	IRR		7/7/1952	0		NY	MILLER, DAMNON
173B	14412			7/7/1952	CAN	UG	NW	SW	24	10N	56E	0	IRD		7/7/1952	0		NY	GARDNER, FLORENCE L.
173B	14413			7/7/1952	CAN	UG	NW	NW	24	10N	56E	0	IRD		7/7/1952	0		NY	GARDNER, EARL L.
173B	14414			7/7/1952	WDR	UG	NW	NW	13	09N	56E	6.4	IRD		7/7/1952			NY	TARRELL, WILLIAM
173B	14416			7/8/1952	WDR	UG	NE	NE	29	10N	57E	6.4	IRD		7/8/1952			NY	WALLACE, MILTON K.
173B	14417			7/8/1952	WDR	UG	NW	NW	18	10N	57E	6.4	IRD		7/8/1952			NY	SHRIVER, EZRA B.
173B	14418			7/8/1952	WDR	UG	NW	SE	17	10N	57E	0	IRD		7/8/1952	0		NY	BAKER, ARTHUR C.
173B	14419			7/8/1952	WDR	UG	NW	NW	24	09N	56E	0	IRD		7/8/1952	0		NY	HAWKINS, THOMAS UDALL
173B	14420			7/8/1952	WDR	UG	NW	NW	24	09N	56E	6.4	IRR		7/8/1952	1280	AFS	NY	HANSEN, JEWEL EVELYN
173B	14426			7/14/1952	WDR	UG	NE	NE	17	10N	57E	0	IRD		7/14/1952	0		NY	AWERKAMP, EDWARD P.
173B	14432			7/17/1952	WDR	UG	NW	NW	24	09N	56E	0	IRD		7/17/1952	0	AFS	NY	OTIS, GEORGE K.
173B	14433			7/17/1952	WDR	UG	NW	NE	3	09N	57E	6.4	IRD		7/17/1952			NY	OTIS, RUTH
173B	14434			7/17/1952	WDR	UG	NW	SE	3	09N	57E	6.4	IRD		7/17/1952			NY	OTIS, ROBERT M. SR.
173B	14435			7/17/1952	CAN	UG	NW	NE	2	09N	57E	6.4	IRD		7/17/1952			NY	OTIS, ROBERT JR.
173B	14436			7/17/1952	WDR	UG	NW	NW	13	09N	56E	0	IRD		7/17/1952	0	AFS	NY	STANTON, PETER
173B	14437			7/17/1952	CAN	UG	NW	NE	2	09N	57E	6.4	IRD		7/17/1952			NY	OTIS, ROBERT, JR.
173B	14472			8/4/1952	WDR	UG	NW	NW	13	09N	56E	0	IRD		8/4/1952	0	AFS	NY	WEGGE, MARY GRIGSBY
173B	14473			8/4/1952	WDR	UG	NW	NW	24	09N	56E	0	IRD		8/4/1952	0	AFS	NY	WEGGE, JAMES ROBERT
173B	14496			8/21/1952	CAN	UG	NW	NW	24	09N	56E	0	IRD		8/21/1952	0	AFS	NY	LIVINGSTON, EARL SAMUEL
173B	14513			9/1/1952	WDR	UG	NW	NE	10	09N	57E	0	IRD		9/1/1952	0		NY	BLEY, HERBERT G.
173B	14514			9/3/1952	CAN	UG	NW	NE	26	10N	56E	6.4	IRD		9/3/1952			NY	DALLEY, WELDON H.
173B	14515			9/3/1952	CAN	UG	NE	NW	26	10N	56E	6.4	IRD		9/3/1952			NY	DALLEY, DON WELDON
173B	14519			9/11/1952	WDR	UG	NW	SE	10	09N	57E	0	IRD		9/11/1952	0		NY	MARTIN, ROBERT D.
173B	14524			9/15/1952	CAN	UG	NW	NE	11	09N	57E	0	IRD		9/15/1952	0		NY	MOORE, WILLIAM F.
173B	14525			9/15/1952	CAN	UG	NW	NE	13	10N	56E	0	IRD		9/15/1952	0		NY	LEATART, MARJORY W.
173B	14526			9/15/1952	CAN	UG	NW	NW	13	10N	56E	0	IRD		9/15/1952	0		NY	LEATART, DINGMAN L.
173B	14527			9/15/1952	CAN	UG	NW	NE	35	10N	56E	0	IRD		9/15/1952	0		NY	FITZER, MILTON J.
173B	14550			9/19/1952	CAN	UG	NW	NE	12	09N	57E	0	IRD		9/19/1952	0		NY	PATTERSON, D. CONSTANCE
173B	14551			9/19/1952	WDR	UG	NW	NE	14	09N	57E	0	IRD		9/19/1952	0		NY	MOORE, ROBERT E.
173B	14552			9/19/1952	WDR	UG	NW	SE	11	09N	57E	0	IRD		9/19/1952	0		NY	MOORE, JAMES A. JR.
173B	14553			9/19/1952	WDR	UG	NW	NE	15	09N	57E	0	IRD		9/19/1952	0		NY	HARRISON, FREDERICK J.
173B	14554			9/19/1952	WDR	UG	NW	NE	13	09N	57E	0	IRD		9/19/1952	0		NY	WALKER, ARTHUR P.
173B	14555			9/19/1952	WDR	UG	NW	NW	17	10N	57E	0	IRD		9/19/1952	0		NY	PETERSON, HAROLD LAURENCE
173B	14577			10/14/1952	WDR	UG	NW	NW	24	10N	56E	0	IRR		10/14/1952	0		NY	CRANDILL, LYLE Q.
173B	14578			10/14/1952	WDR	UG	NW	SW	24	10N	56E	0	IRR		10/14/1952	0		NY	CRANDALL, THELMA
173B	14615		4940	11/10/1952	CER	UG	NE	NW	1	09N	57E	1.34	IRD		11/10/1952	196.4	AFA	NY	MCELROY, MARLIN W. & JANA M.

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173B	14619			11/13/1952	WDR	UG		S2	23	10N	56E	0	IRD		11/13/1952	0		NY	CRANDALL, THELMA
173B	14620			11/13/1952	WDR	UG	NW	NW	23	10N	56E	0	IRD		11/13/1952	0		NY	CRANDALL, LYLE Q.
173B	14642			11/26/1952	CAN	UG						0	IRD		11/26/1952	0		NY	RIPLING, WILLIAM JOHN
173B	1467		261	10/20/1909	CER	STR			35	05N	56E	0.1	IRR		10/20/1909	72.4	AFA	NY	CROSS L. RANCHES LLC
173B	1468		200	10/20/1909	CER	SPR	SE	NW	30	05N	57E	0.115	IRR		10/20/1909	49.03	AFA	NY	CROSS L. RANCHES LLC
173B	14703			12/22/1952	WDR	UG	NE	SW	32	10N	57E	0	IRR		12/22/1952	0		NY	TRAUTMAN, FRED
173B	14724			12/23/1952	WDR	UG	NE	SE	11	09N	57E	0	IRD		12/23/1952	0		NY	DICKSON, BERT L.
173B	14749			12/30/1952	WDR	UG	NW	SE	13	09N	57E	0	IRD		12/30/1952	0		NY	NELSON, GEORGE OTIS
173B	14766			1/12/1953	WDR	UG	NW	SE	14	09N	57E	0	IRD		1/12/1953	0		NY	MERRIMAN, LAURENCE M.
173B	14767			1/12/1953	WDR	UG	NW	SE	12	09N	57E	0	IRD		1/12/1953	0		NY	NUNN, RITA GAIL
173B	14780			1/19/1953	WDR	UG		S2	36	10N	57E	0	IRD		1/19/1953	0		NY	MORGENROTH, HENRI
173B	14840			2/9/1953	WDR	UG	NE	SW	32	10N	57E	0	IRD		2/9/1953	0		NY	MILLER, GROVER F. JR.
173B	15058			5/14/1953	WDR	UG	NE	SE	31	10N	57E	0	IRR		5/14/1953	0		NY	TRAUTMAN, FRED
173B	1522			11/18/1909	CAN	STR			1	11N	56E	0	IRR		11/18/1909	0		NY	LEAK, E.C.
173B	15247		4623	8/4/1953	CER	UG	NW	SW	5	03N	54E	0.015	STK		8/4/1953	11.201	AFA	NY	CROSS L. RANCHES, LLC
173B	15259			8/14/1953	CAN	UG	NE	NW	6	09N	57E	0	IRD		8/14/1953	0		NY	MANZONIE, GAILIN P.
173B	15260			8/14/1953	CAN	UG	NE	NE	6	09N	57E	0	IRD		8/14/1953	0		NY	MANZONIE, DELLIE
173B	15318			9/28/1953	CAN	UG	NW	NE	12	09N	57E	0	IRD		9/28/1953	0		NY	PATTERSON, D. CONSTANCE
173B	15319			9/28/1953	CAN	UG	NE	SE	2	09N	57E	0	IRR		9/28/1953	0		NY	STEPT, BARRY
173B	15320			9/28/1953	CAN	UG	NE	NE	2	09N	57E	0	IRR		9/28/1953	0		NY	OTIS, ROBERT M. JR.
173B	15451			12/21/1953	CAN	UG	NW	NE	31	10N	57E	0	IRD		12/21/1953	0		NY	WOTKYNS, ELIZABETH ARMSTRONG
173B	1546			12/4/1909	CAN	STR			32	06N	57E	0	IRR		12/4/1909	0		NY	CONE, FRED S.
173B	15508			2/19/1954	CAN	UG	NW	SE	1	09N	57E	0	IRD		2/19/1954	0		NY	OTIS, RUTH
173B	15509			2/19/1954	CAN	UG	NW	NE	11	09N	57E	0	IRR		2/19/1954	0		NY	OTIS, R.M. SR.
173B	15524		4859	3/3/1954	CER	UG	NE	SW	1	09N	57E	1.34	IRR		3/3/1954	192	AFA	NY	JOHN & LAURA RUTLEDGE ANDREA AARON ALLEN LYNN
173B	15544		4799	3/8/1954	CER	SPR	SW	SW	10	12N	56E	0.05	QM		3/8/1954	0	AFA	NY	DUCKWATER SCHOOL DISTRICT
173B	15589		4415	4/7/1954	CER	SPR	SW	NW	16	11N	59E	0.007	DOM		4/7/1954	0	AFA	NY	U.S.-FOREST SERVICE
173B	15596		4800	4/12/1954	CER	SPR	SE	SW	32	07N	57E	0.5	IRR		4/12/1954	177.2	AFA	NY	CROSS L. RANCHES LLC
173B	15630			5/7/1954	CAN	UG	SW	SE	9	10N	57E	3.5	IRD		5/7/1954			NY	GARDNER, BEN B.
173B	15631			5/7/1954	CAN	UG	E2	NE	17	10N	57E	0	IRD		5/7/1954	0		NY	HILL, J.D.
173B	15653		5836	5/17/1954	CER	STR	SW	NW	29	06N	57E	0.8	IRD		5/17/1954	97.18	AFA	NY	CROSS L. RANCHES LLC
173B	16683			8/2/1955	WDR	UG	NE	NE	10	10N	57E	0	IRD		8/2/1955	0		NY	MALONE, ROY C.
173B	16684			8/2/1955	CAN	UG	NE	SE	10	10N	57E	5	IRD		8/2/1955			NY	MALONE, WILLETTA N.
173B	16700		4665	8/8/1955	CER	SPR	SE	NW	16	11N	59E	0.031	OTH		8/8/1955	0	AFA	NY	NEVADA-DEPARTMENT OF TRANSPORTATION
173B	16728		5375	9/1/1955	CER	UG	NE	NW	35	09N	57E	0.0065	IND		9/1/1955	4.7046	AFA	NY	SHELL OIL COMPANY
173B	16729		5376	9/1/1955	CER	UG	NE	NW	35	09N	57E	0.026	IND		9/1/1955	18.825	AFA	NY	SHELL OIL COMPANY
173B	16800			12/5/1955	PER	STR	SW	NW	25	14N	56E	1	IRR		12/5/1955	723.8	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	16801			12/5/1955	PER	STR	NE	NW	36	14N	56E	1	IRR		12/5/1955	723.8	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	16829		5835	1/6/1956	CER	STR	SE	SW	34	12N	56E	3.2	IRD		1/6/1956	964.53	AFA	NY	NORMA J. BRADSHAW (40%), KARL TODD BRADSHAW (UNDIV.20%), JODY MAE BRADSHAW (UNDIV.20%), NORMA J. BRADSHAW (UNDIV.20%)
173B	16855			2/6/1956	WDR	UG	NW	NE	8	10N	57E	3.2	IRD		2/6/1956			NY	JOHNSON, CLYDE
173B	17075			10/24/1956	CAN	SPR	SE	SW	3	06N	57E	0	MM		10/24/1956	0		NY	STURGES, STEPHEN H.
173B	17508			3/12/1958	CAN	OSW	SE	SE	30	10N	57E	0	IRR		3/12/1958	0	AFA	NY	MANZONIE, DELLIE
173B	17516	11545		3/31/1958	WDR	STR	SE	SE	2	04N	55E	0	IRR		4/9/1946	0		NY	SHARP, HOWARD N
173B	17558			5/14/1958	CAN	STR			21	10N	57E	16.2	IRR		5/14/1958	0		NY	MANZONIE, ADELLIE
173B	17753			12/18/1958	WDR	UG	NE	SW	2	11N	56E	0	IRR		12/18/1958	0		NY	BRADSHAW, KARL
173B	17759			12/23/1958	WDR	UG	NW	NW	8	10N	57E	0	IRD		12/23/1958	0		NY	NIELSON, NORMAN LACONT
173B	17799			1/26/1959	CAN	UG	NW	NW	8	10N	57E	0	IRD		1/26/1959	0		NY	NIELSON, MARY ELIZABETH
173B	17800			1/26/1959	CAN	UG	NW	NW	7	10N	57E	4	IRD		1/26/1959	1280	AFA	NY	LABRUM, CYRIL J.
173B	17807			1/30/1959	CAN	UG	SW	SW	34	12N	56E	0	IRR		1/30/1959	0	AFS	NY	ASUMENDI, DOMINGO
173B	17809		5280	2/2/1959	CER	SPR	SW	SE	2	13N	57E	0.015	STK		2/2/1959	11.201	AFA	WP	RUSSELL, DANIEL H.
173B	17817			2/4/1959	CAN	STR			21	10N	57E	20	IRR		2/4/1959			NY	MANZONIE, DELLIE
173B	17864			2/27/1959	WDR	UG	NW	NW	12	11N	56E	0	IRR		2/27/1959	0	AFA	NY	BARTHOLOMAE, WILLIAM A.
173B	17865			2/27/1959	CAN	UG	NE	SE	2	11N	56E	2	IRR		2/27/1959	800	AFA	NY	HALSTEAD-FORSGREN RANCHES, INC.
173B	17887			3/18/1959	WDR	UG	NE	NE	3	10N	57E	0	IRD		3/18/1959	0		NY	YOUNG, JERRY R. DR.
173B	17888			3/18/1959	WDR	UG	NE	NW	2	10N	57E	0	IRD		3/18/1959	0		NY	YOUNG, JEANNETTE J.

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173B	18365		5506	10/13/1959	CER	SPR	SW	SW	1	08N	57E	0.1	IRR		10/13/1959	40	AFA	NY	SHARP, GERALD HOWARD
173B	18366		5507	10/13/1959	CER	SPR	NW	NW	12	08N	57E	0.6	IRR		10/13/1959	240	AFA	NY	CROSS L. RANCHES LLC
173B	18367		5508	10/13/1959	CER	SPR	SW	SW	1	08N	57E	0.1	IRR		10/13/1959	20	AFA	NY	CROSS L. RANCHES LLC
173B	18399			10/30/1959	WDR	UG	SE	SW	27	12N	56E	3	IRR		10/30/1959	1200	AFA	NY	BARTHOLOMAE, WILLIAM A.
173B	18482			12/16/1959	DEN	UG	SW	NE	15	08N	55E	0	PWR		12/16/1959	0	AFA	NY	ANDREAS, MILT
173B	18632		5210	3/9/1960	CER	UG	SE	SW	27	12N	56E	0.006	STK		3/9/1960	4.4806	AFA	NY	RUSSELL, DANIEL H.
173B	1936		255	1/23/1911	CER	STR	SW	SW	5	05N	57E	0.131	IRR		1/23/1911	39.3	AFS	NY	GRANT, W.H.
173B	19741			4/10/1961	WDR	SPR	NW	SE	30	11N	58E	0.05	IRR		4/10/1961	0		NY	OSWALD, CARL
173B	19980			7/7/1961	CAN	SPR	NW	NE	25	11N	58E	3	IRR		7/7/1961	1200	AFA	NY	MANZONIE BROTHERS
173B	20035			8/15/1961	CAN	UG	NW	NE	5	15N	57E	0	STK		8/15/1961	0	AFA	WP	HALSTEAD, ED
173B	20210			12/22/1961	CAN	SPR	NW	NE	25	11N	58E	3	IRR		12/22/1961	1200	AFA	NY	MANZONIE BROTHERS
173B	20770		8004	10/9/1962	CER	SPR	NE	SE	30	11N	56E	0.003	STK		10/9/1962	2.7006	AFA	NY	BRADSHAW, BARRY KARL & NORMA J.
173B	20781		7531	10/16/1962	CER	UG	SW	SE	35	05N	55E	2.7	IRD		10/16/1962	640	AFA	NY	SHARP, GERALD H.
173B	20789			10/17/1962	ABR	UG	SE	SE	32	05N	55E	0	IRD		10/17/1962	0	AFA	NY	WARTES, LORA M.
173B	20789	CHANGED BY:	23164		CER	UG													
173B	20790			10/17/1962	ABR	UG	SE	SW	32	05N	55E	0	IRD		10/17/1962	0		NY	WARTES, THOMAS A.
173B	20790	CHANGED BY:	23163		CAN	UG													
173B	20844			11/13/1962	ABR	UG	NW	NW	33	05N	55E	0	IRD		11/13/1962	0	AFA	NY	GIBSON, WILLIAM B.
173B	20844	CHANGED BY:	22711		DEN	UG													
173B	20844	CHANGED BY:	22624		CAN	UG													
173B	20844	CHANGED BY:	24006		CAN	UG													
173B	20845			11/13/1962	ABR	UG	NW	NE	33	05N	55E	0	IRD		11/13/1962	0		NY	GIBSON, AVA B.
173B	20845	CHANGED BY:	23251		CAN	UG													
173B	20846			11/13/1962	ABR	UG	SW	SW	27	05N	55E	0	IRD		11/13/1962	0		NY	GIBSON, ROY T. MR.
173B	20846	CHANGED BY:	23623		CAN	UG													
173B	20846	CHANGED BY:	23250		CAN	UG													
173B	20847			11/13/1962	ABR	UG	SW	NW	27	05N	55E	0	IRD		11/13/1962	0	AFA	NY	GIBSON, AVA
173B	20847	CHANGED BY:	22712		CAN	UG													
173B	20847	CHANGED BY:	22625		CAN	UG													
173B	20855			11/19/1962	WDR	STR	SW	SW	2	11N	56E	5.4	IRD		11/19/1962	0		NY	BRADSHAW, MAE K.
173B	20856		7978	11/19/1962	CER	STR	NW	NW	11	11N	56E	2.2	IRR		11/19/1962	1225.4	AFA	NY	NORMA J. BRADSHAW (40%), KARL TODD BRADSHAW (UNDIV.20%), JODY MAE BRADSHAW (UNDIV.20%), NORMA J. BRADSHAW (UNDIV.20%)
173B	20908			12/26/1962	DEN	UG	SE	NE	15	08N	55E	0	PWR		12/26/1962	0	AFA	NY	ANDREAS, MILT
173B	20910			12/26/1962	DEN	UG	NW	NE	21	07N	55E	0	PWR		12/26/1962	0		NY	ANDREAS, MILT
173B	20978			1/21/1963	ABR	UG	SW	SW	34	05N	55E	0	IRD		1/21/1963	0	AFA	NY	GIBSON, WILLIAM B.
173B	20978	CHANGED BY:	23252		CER	UG													
173B	21167			3/27/1963	ABR	UG	SW	SE	28	05N	55E	0	IRD		3/27/1963	0		NY	COLLINS, AMY LEE
173B	21167	CHANGED BY:	21810		CAN	UG													
173B	21168			3/27/1963	CAN	UG	SW	SW	28	05N	55E	0	IRD		3/27/1963	0		NY	COLLINS, MYLES LYNDON
173B	21186		8300	4/9/1963	CER	STR	NE	NW	11	11N	56E	5.4	IRD		4/9/1963	1280	AFA	NY	NORMA J. BRADSHAW (40%), KARL TODD BRADSHAW (UNDIV.20%), JODY MAE BRADSHAW (UNDIV.20%), NORMA J. BRADSHAW (UNDIV.20%)
173B	21197			4/15/1963	CAN	UG	NE	SE	34	06N	56E	0	IRR		4/15/1963	0		NY	CASEY, WILLIAM H.
173B	2136		92	7/8/1911	CER	SPR	NE	NE	25	11N	58E	0.025	DOM		7/8/1911	0	AFA	NY	U.S.-FOREST SERVICE
173B	21578			10/14/1963	WDR	UG	SE	SE	2	09N	57E	0	IRD		10/14/1963	0	AFA	NY	BUNCE, ELLEN M.
173B	21579			10/14/1963	WDR	UG	NE	NE	2	09N	57E	0	IRD		10/14/1963	0	AFA	NY	BUNCE, SANFORD A.
173B	21585			10/16/1963	CAN	UG	NW	NE	12	09N	57E	0	IRD		10/16/1963	0	AFA	NY	DILLARD, UEL
173B	216			9/29/1906	PER	SPR		NW	32	13N	56E	15	IRR		9/29/1906	2400	AFA	NY	TOGNONI, JOSEPH C.
173B	21810	21167		2/12/1964	CAN	UG	NW	SE	28	05N	55E	0	IRD		3/27/1963	0		NY	PETERSON, REDGE
173B	21932		6888	4/8/1964	CER	SPR	SW	SW	25	16N	57E	0.004	MM		4/8/1964	3.2223	AFA	WP	CENTURY GOLD, LLC
173B	21933		6889	4/8/1964	CER	SPR	SW	NW	36	16N	57E	0.01	MM		4/8/1964	7.396	AFA	WP	CENTURY GOLD, LLC
173B	21934			4/8/1964	WDR	UG	NW	NE	36	16N	57E	0	MM		4/8/1964	0		WP	BEST CHANCE MINING CO.
173B	21964		7994	4/22/1964	CER	UG	SE	NW	23	06N	56E	0.12	IRR	Y	4/22/1964	86.85	AFA	NY	CROSS L. RANCES LLC
173B	21965			4/22/1964	CAN	UG	SE	NE	23	06N	56E	0	IRR		4/22/1964	0	AFA	NY	CASEY, WILLIAM H
173B	21966			4/22/1964	CAN	UG	NW	NE	27	06N	56E	0	IRR		4/22/1964	0	AFA	NY	CASEY, WILLIAM H
173B	21967			4/22/1964	CAN	UG	SW	NW	27	06N	56E	1.4	IRR		4/22/1964	320	AFA	NY	CASEY, WILLIAM H.

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Basin	App	Change App.	Cert	File Date	Status[1]	Source[2]	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units[3]	County	Owner of Record
173B	21990		7348	5/11/1964	CER	SPR	NW	SE	26	16N	57E	0.007	MM		5/11/1964	0	AFA	WP	CENTURY GOLD, LLC
173B	22049			6/16/1964	DEN	UG	NE	NE	28	10N	57E	5.4	IRD		6/16/1964	1280	AFA	NY	MCLARTY, CLARA G.
173B	22050		7564	6/16/1964	CER	UG	SE	SE	12	10N	57E	2.33	IRD		6/16/1964	640	AFA	NY	DIELEMAN, RICHARD W.
173B	22050	CHANGED BY:	76987T		WDR	UG													
173B	22050	CHANGED BY:	81692		RFA	UG													
173B	22050	CHANGED BY:	77161T		EXP	UG													
173B	22051		7754	6/16/1964	CER	UG	NE	NE	23	10N	57E	4.59	IRD		6/16/1964	640	AFA	NY	CORLIS-COLE, EVA M AND COLE, MICHAEL P
173B	22052			6/16/1964	CAN	UG	NE	NE	14	10N	57E	5.4	IRD		6/16/1964	1280	AFA	NY	FARMER, BEULAH
173B	22053			6/16/1964	CAN	UG	NE	NW	23	10N	57E	0	IRD		6/16/1964	0	AFA	NY	MCGUIRE, THERON Z.
173B	22054			6/16/1964	CAN	UG	NE	NE	22	10N	57E	0	IRD		6/16/1964	0	AFA	NY	EASTER, REX M.
173B	22055			6/16/1964	DEN	UG	NE	NW	21	10N	57E	5.4	IRD		6/16/1964	1280	AFA	NY	EASTER, VIRGINIA L.
173B	22056			6/16/1964	DEN	UG	NE	NW	22	10N	57E	0	IRD		6/16/1964	0		NY	JAMES, WANDA C.
173B	22057			6/16/1964	CAN	UG	NE	NW	13	10N	57E	0	IRD		6/16/1964	0	AFA	NY	BAILEY, JOE W.
173B	22058			6/16/1964	CAN	UG	NE	NW	14	10N	57E	5.4	IRD		6/16/1964	1280	AFA	NY	LANDERS, MURRIEL K.
173B	22079			7/1/1964	CAN	UG	SE	SE	34	05N	55E	0	IRR		7/1/1964	0		NY	SHARP, GERALD
173B	22080		7967	7/1/1964	CER	UG	SE	NW	35	05N	55E	2.7	IRR		7/1/1964	456	AFA	NY	CROSS L. RANCHES LLC
173B	22081			7/1/1964	CAN	UG	NE	SE	36	05N	55E	0	IRR		7/1/1964	0	AFA	NY	SHARP, NORMAN
173B	22264			9/28/1964	DEN	UG	NE	NW	33	10N	57E	0	IRD		9/28/1964	0	AFA	NY	WATSON, WYNONA K.
173B	22265			9/28/1964	DEN	UG	NE	NW	16	10N	57E	0	IRD		9/28/1964	0	AFA	NY	BIFFLE, JUANITA
173B	22346			12/2/1964	CAN	UG						0	IRR		12/2/1964			NY	CYR, VERN V.
173B	22347			12/1/1964	CAN	SPR	SE	SW	4	10N	58E	0	IRR		12/1/1964	0	AFA	NY	CYR, VERN V.
173B	22348			12/1/1964	CAN	UG	SE	SE	4	10N	58E	0	IRR		12/1/1964	0	AFA	NY	CYR, VERN V.
173B	22393			1/20/1965	CAN	UG	NE	NW	35	09N	57E	0	IND		6/20/1965	0		NY	REFINERS SALES COMPANY
173B	22604			5/25/1965	CAN	UG	SE	NW	7	10N	58E	0	IRD		5/25/1965	0	AFA	NY	DAVIES, PATRICIA
173B	22624	20844		6/10/1965	CAN	UG	NW	NW	33	05N	55E	5.4	IRD		11/13/1962	1280	AFA	NY	GIBSON, WILLIAM B.
173B	22625	20847		6/10/1965	CAN	UG	SW	NW	27	05N	55E	0	IRD		11/13/1962	0	AFA	NY	GIBSON, GEORGIA L.
173B	22711	20844		7/30/1965	DEN	UG	NW	NW	33	05N	55E	0	IRD		11/13/1962	0	AFA	NY	GIBSON, WILLIAM B
173B	22712	20847		7/30/1965	CAN	UG	SW	NW	27	05N	55E	0	IRD		11/13/1962	0		NY	GIBSON, AVA
173B	22780			9/14/1965	CAN	UG	NE	NW	31	15N	57E	5.4	IRD		9/14/1965	1280	AFA	WP	FULTON, MARGARET
173B	22781			9/14/1965	CAN	UG	NE	NW	32	15N	57E	0	IRD		9/14/1965	0		WP	QUADE, ROBERT N.
173B	22781	CHANGED BY:	25803		DEN	UG													
173B	22782			9/14/1965	CAN	UG	NE	NE	31	15N	57E	0	IRD		9/14/1965	0		WP	FULTON, G.V.
173B	22783			9/14/1965	CAN	UG	NE	NE	1	14N	56E	0	IRD		9/14/1965	0		WP	TUBBS, JUANELE
173B	22784			9/14/1965	CAN	UG		LT10	6	14N	57E	0	IRD		9/14/1965	0	AFA	WP	TUBBS, FENNER
173B	22807		8024	9/29/1965	CER	UG	NE	NE	15	10N	57E	1	IRD	Y	9/29/1965	252.08	AFA	NY	GROVER, JUDITH ELLEN AND DANA B
173B	22808			9/29/1965	CAN	UG	NE	NE	27	10N	57E	0	IRD		9/29/1965	0	AFA	NY	BRUCE, WANDA E.
173B	22881			12/6/1965	DEN	UG	NE	NE	19	15N	57E	0	IRD		12/6/1965	0		WP	SANDLIN, WILEY O.
173B	22920			1/13/1966	CAN	UG	NW	NE	12	09N	57E	5.4	IRD		1/13/1966	1280	AFA	NY	LYNN, JEFFREY ALLEN
173B	23130			5/9/1966	CAN	SPR	SW	SE	36	16N	57E	0.5	MM		5/9/1966	0		WP	LEWIS, FRANK W.
173B	23163	20790		6/6/1966	CAN	UG	NW	NW	32	05N	55E	0	IRD		10/17/1962	0		NY	WARTES, THOMAS A.
173B	23164	20789	7087	6/6/1966	CER	UG	NE	NE	32	05N	55E	5.26	IRD	Y	10/17/1962	1280	AFA	NY	SWARTZ, BETH LOUANN
173B	23182			6/10/1966	CAN	UG	NW	NE	32	10N	57E	0	IRR		6/10/1966	0		NY	WIRTH, CHARLES N.
173B	23250	20846		7/21/1966	CAN	UG	SW	SW	27	05N	55E	0	IRR		11/13/1962	0		NY	GIBSON, ROY T.
173B	23251	20845		7/21/1966	CAN	UG	SE	SE	33	05N	55E	0	IRD		11/13/1962	0		NY	GIBSON, AVA B.
173B	23252	20978	7289	7/21/1966	CER	UG	SE	SW	34	05N	55E	2.65	IRD	Y	1/21/1963	634	AFA	NY	JENKINS FARMS
173B	23252	CHANGED BY:	78269T		EXP	UG								Y					
173B	23252	CHANGED BY:	78270		ABR	UG								Y					
173B	23451			10/21/1966	DEN	SPR	SW	SW	25	16N	57E	0.1	MM		10/21/1966	0		WP	ONETHA MINES INC.
173B	23452			10/21/1966	DEN	SPR	NW	SE	26	16N	57E	0.1	MM		10/21/1966	0		WP	ONETHA MINES, INC.
173B	23453			10/21/1966	DEN	SPR	SW	NW	36	16N	57E	0.1	MM		10/21/1966	0		WP	ONETHA MINES INC.
173B	23487		7769	11/14/1966	CER	SPR	SW	SE	36	16N	57E	0.005	MM		11/14/1966	4.0203	AFA	WP	CENTURY GOLD, LLC
173B	23488		7770	11/14/1966	CER	SPR	SW	SE	36	16N	57E	0.006	MM		11/14/1966	4.0203	AFA	WP	CENTURY GOLD, LLC
173B	23489		7771	11/14/1966	CER	SPR	NW	SE	36	16N	57E	0.004	MM		11/14/1966	3.2223	AFA	WP	CENTURY GOLD, LLC
173B	23623	20846		1/20/1967	CAN	UG	NW	SW	27	05N	55E	0	IRD		11/13/1962	0		NY	GIBSON, ROY T.
173B	2363			2/29/1912	CAN	STR	SE	NW	14	44N	57E	6	MM		2/29/1912			WP	MARION MINING & MILLING CO.
173B	2364			2/29/1912	CAN	STR	NE	NE	10	44N	57E	6	MM		2/29/1912			WP	MARION MINING & MILLING CO.
173B	23746			3/13/1967	CAN	UG	NE	NW	35	09N	57E	0.75	IND		3/13/1967	542.98	AFA	NY	REFINERS SALES COMPANY
173B	23791			4/7/1967	CAN	UG	NE	NW	25	11N	56E	5.4	IRR		4/7/1967	1280	AFA	NY	BRADSHAW, MAE K.
173B	23822			4/21/1967	CAN	UG	NW	SE	29	05N	55E	0	IND		4/21/1967	0		NY	GULF OIL CORPORATION

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Basin	App	Change App.	Cert	File Date	Status[1]	Source[2]	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units[3]	County	Owner of Record
173B	23845			5/8/1967	WDR	UG	SE	SW	5	06N	56E	0	IND		5/8/1967	0		NY	GULF OIL CORPORATION
173B	23853		7728	5/12/1967	CER	UG	SW	SE	14	06N	56E	0.2	IRR		5/12/1967	144.75	AFA	NY	CROSS L. RANCHES LLC
173B	23854		7729	5/12/1967	CER	UG	NW	NE	23	06N	56E	0.2	IRR		5/12/1967	144.75	AFA	NY	CROSS L. RANCHES LLC
173B	23855		7730	5/12/1967	CER	UG	SW	NE	27	06N	56E	0.2	IRR		5/12/1967	80	AFA	NY	CROSS L. RANCHES LLC
173B	23856		7731	5/12/1967	CER	UG	SE	NW	27	06N	56E	0.2	IRR		5/12/1967	144.75	AFA	NY	CROSS L. RANCHES LLC
173B	24006	20844		7/17/1967	CAN	UG	NW	NW	33	05N	55E	5.4	IRD		11/13/1962	1280	AFA	NY	GIBSON, WILLIAM B.
173B	24212			11/8/1967	CAN	UG	SE	SE	6	06N	57E	0	IND		11/8/1967	0		NY	GULF OIL COMPANY
173B	24228			11/20/1967	WDR	UG	NW	SW	10	07N	56E	0	IND		11/20/1967	0		NY	GULF OIL CORPORATION
173B	24259			12/4/1967	WDR	UG	NW	NW	24	06N	56E	0	IND		12/4/1967	0		NY	GULF OIL CORPORATION
173B	24261			12/8/1967	CAN	UG	NW	SW	13	10N	57E	0	IRR		12/8/1967	0	AFA	NY	BAILEY, JOE W.
173B	24335			1/22/1968	WDR	UG	NW	NW	36	03N	54E	0	IND		1/22/1968	0		NY	PAN AMERICAN PETROLEUM CORPORATION
173B	24348			1/29/1968	WDR	SPR	NE	SE	25	03N	54E	0.5	IND		1/29/1968	0		NY	PAN AMERICA PETROLEUM CORPORATION
173B	2444			6/10/1912	DEN	UG	SE	NW	3	11N	56E	0	IRC		6/10/1912	0	AFA	NY	FLETCHER, E.L.
173B	24488			5/13/1968	CAN	UG	SE	NW	7	10N	58E	0	IRD		5/13/1968	0	AFA	NY	DAVIES, PATRICIA
173B	2450			6/12/1912	DEN	STR	NE	NW	3	11N	56E	25	IRC		6/12/1912	0	AFA	NY	FLETCHER, E.L.
173B	24592			7/19/1968	WDR	UG	NE	NW	17	07N	57E	0	IND		7/19/1968	0		NY	GULF OIL CORPORATION
173B	24906			2/12/1969	CAN	UG	NE	NE	27	10N	57E	0	IRD		2/12/1969	0		NY	WATSON, LEON J.
173B	24911		8198	2/18/1969	CER	UG	NE	SE	23	10N	57E	3.23	IRD		2/18/1969	623.64	AFA	NY	CORLIS-COLE, EVA M AND COLE, MICHAEL P
173B	2498			9/4/1912	CAN	STR			23	06N	57E	1	PWR		9/4/1912	0	AFA	NY	NEFF RANCHING COMPANY
173B	25050			4/23/1969	CAN	STR	SE	NW	8	10N	58E	2.5	IRD		4/23/1969	594.9	AFS	NY	MCLARTY, KENNETH W.
173B	2512		2841	9/23/1912	CER	STR	SE	NE	30	06N	57E	1.07	IRR		9/23/1912	324	AFA	NY	CROSS L. RANCHES LLC
173B	25199			8/5/1969	ABR	UG	SW	NW	27	06N	56E	0	IRR		8/5/1969	0		NY	CASEY, WILLIAM H.
173B	25199	CHANGED BY:	26480		CAN	UG													
173B	25200			8/5/1969	CAN	UG	NW	NE	27	06N	56E	0	IRR		8/5/1969	0		NY	CASEY, WILLIAM H.
173B	25202		7998	8/11/1969	CER	UG	SE	NW	23	06N	56E	0.12	IRR	Y	8/11/1969	86.85	AFA	NY	CROSS L. RANCHES LLC
173B	25203		7999	8/11/1969	CER	UG	SE	NW	23	06N	56E	0.184	IRR	Y	8/11/1969	133.18	AFA	NY	CROSS L. RANCHES LLC
173B	25207		8819	8/14/1969	CER	UG	SE	NE	15	10N	57E	2.67	IRD	Y	8/14/1969	542	AFA	NY	GROVER, JUDITH ELLEN AND DANA B
173B	25240			8/26/1969	CAN	STR	SW	NE	23	11N	56E	0	STO		8/26/1969	0	AFS	NY	BRADSHAW, MAE K.
173B	25307			10/6/1969	CAN	STR		W2	7	10N	58E	0	IRR		10/6/1969	0	AFS	NY	DAVIES, PATRICIA M.
173B	25405			12/31/1969	CAN	UG	NE	NW	31	15N	57E	0	IRD		12/31/1969	0		WP	FULTON, MARGARET
173B	25406			12/31/1969	CAN	UG	NE	NE	31	15N	57E	0	IRD		12/31/1969	0		WP	FULTON, G.V.
173B	25407			12/31/1969	DEN	UG	NE	NE	1	14N	56E	0	IRD		12/31/1969	0		WP	TUBBS, JUANELLE
173B	25408			12/31/1969	CAN	UG	NE	NE	6	14N	57E	5.4	IRR		12/31/1969	1280	AFS	WP	TUBBS, FENNER
173B	25434			1/13/1970	CAN	STR	SW	NE	7	10N	58E	0	IRR		1/13/1970	0	AFA	NY	DAVIES, PATRICIA M.
173B	25437			1/16/1970	CAN	UG	NW	NW	32	05N	55E	0	IRR		1/16/1970	0	AFS	NY	WILLOWLANE INC.
173B	25803	22781		9/22/1970	DEN	UG	NE	NW	32	15N	57E	0	IRD		9/14/1965	0		WP	QUADE, ROBERT N.
173B	25865			11/13/1970	CAN	SPR	SW	SW	25	16N	57E	0	MM		11/13/1970	0	AFA	WP	LEWIS, FRANK W.
173B	26048			4/15/1971	WDR	UG	NE	SW	7	08N	57E	0	IND		4/15/1971	0		NY	SUTHERLAND & SONS
173B	26128			5/13/1971	CAN	SPR	NW	NW	36	16N	57E	0.5	MM		5/13/1971	362.01	AFA	WP	LEWIS, FRANK W.
173B	26129			5/13/1971	CAN	SPR	SW	SW	25	16N	57E	0.5	MM		5/13/1971	362.01	AFA	WP	LEWIS, FRANK W.
173B	26137		10518	5/19/1971	CER	UG	NE	SE	36	05N	55E	2.01	IRR		5/19/1971	485.84	AFA	NY	CROSS L. RANCHES LLC
173B	26239		8779	7/30/1971	CER	UG	NW	NW	28	16N	57E	0.029	MM		7/30/1971	5.3706	AFA	WP	BEMA GOLD (U.S.) INC.
173B	26433		9394	12/13/1971	ABR	UG	SE	SE	33	05N	55E	0	IRR		12/13/1971	0	AFA	NY	GIBSON, M. DEAN
173B	26433	CHANGED BY:	57465		PER	UG													
173B	26434		9396	12/13/1971	CER	UG	NW	SW	27	05N	55E	5.4	IRR		12/13/1971	1280	AFA	NY	CB DEVELOPMENT
173B	26435		9395	12/13/1971	ABR	UG	NW	NW	33	05N	55E	0	IRR		12/13/1971	0	AFA	NY	GIBSON, M. DEAN
173B	26435	CHANGED BY:	57466		PER	UG													
173B	26480	25199		1/14/1972	CAN	UG	NW	NW	27	06N	56E	0	IRR		8/5/1969	0		NY	CASEY, INGER M.
173B	2669			3/29/1913	WDR	SPR	SE	SW	33	15N	57E	0	IRR		3/29/1913	0	AFS	WP	ROSEVEAR, BESSIE
173B	2672		323	3/31/1913	CER	SPR	NE	SE	26	16N	57E	0.003	MM		3/31/1913	2.1789	AFA	WP	WALKER, CHARLES A.
173B	26888			8/10/1972	CAN	STR	SW	NE	23	11N	56E	5.4	STO		8/10/1972	826.67	AFA	NY	NORMA J. BRADSHAW (40%), KARL TODD BRADSHAW (UNDIV.20%), JODY MAE BRADSHAW (UNDIV.20%), NORMA J. BRADSHAW (UNDIV.20%)
173B	27064		8820	10/12/1972	CER	UG	NW	SW	13	10N	57E	2	IRR		10/12/1972	600	AFA	NY	REYNOLDS, JACKIE S
173B	27065		8821	10/12/1972	CER	UG	NE	NW	13	10N	57E	1	IRR		10/12/1972	280	AFA	NY	MCELROY, HARLAN AND KATHY
173B	27217		10519	1/3/1973	CER	UG	SE	SE	34	05N	55E	4.7	IRR		1/3/1973	1280	AFA	NY	CROSS L. RANCHES, LLC
173B	27377		9372	3/28/1973	CER	UG	SW	NW	27	05N	55E	5.4	IRR		3/28/1973	1280	AFA	NY	CB DEVELOPMENT
173B	27491		10760	5/29/1973	CER	UG	NW	NE	12	09N	57E	2.62	IRR		5/29/1973	638.68	AFA	NY	HENRY, C.J. AND LYNN, ANDREA

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Basin	App	Change App.	Cert	File Date	Status[1]	Source[2]	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units[3]	County	Owner of Record
173B	27491	CHANGED BY:	40758		WDR	UG													
173B	2791		408	9/26/1913	CER	STR	NW	NE	20	04N	56E	0.25	MM		9/26/1913	0	AFA	NY	WILLOW CREEK GOLD MINING CO. OF NV
173B	2793			9/29/1913	CAN	STR	NW	SE	18	04N	56E	0	MM		9/29/1913	0	AFA	NY	WILLOW CREEK GOLD MINING CO. OF NEV.
173B	28626			8/20/1974	PER	UG	SW	NW	27	06N	56E	0.016	STK		8/20/1974	11.201	AFA	NY	CROSS L. RANCHES LLC
173B	28627			8/20/1974	PER	UG	NW	NE	27	06N	56E	1	IRR		8/20/1974	160	AFA	NY	CROSS L RANCHES, LLC
173B	28911		9791	11/14/1974	CER	UG	NW	NE	32	04N	53E	0.025	STK		11/14/1974	13.442	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983 TRUST
173B	2902		287	3/5/1914	CER	SPR	NW	SW	30	03N	55E	0.025	STK		3/5/1914	11.201	AFA	NY	CROSS L RANCHES, LLC
173B	2902	CHANGED BY:	11787		DEN	SPR													
173B	29123	13682	8792	1/6/1975	CER	STR	NE	SW	21	12N	56E	0.015	STK		4/16/1951	5.1864	AFA	NY	HALSTEAD FORSGREN RANCHES
173B	29232		10602	2/20/1975	CER	RES	SE	NW	3	03N	52E	0	STK		2/20/1975	23.508	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983 TRUST
173B	29612			8/28/1975	CAN	UG	NW	NW	24	06N	57E	1.4	IRR		8/28/1975	320	AFA	NY	TAYLOR, MIRIAM
173B	29613			8/28/1975	CAN	UG	NW	NE	19	04N	55E	2.7	IRR		8/28/1975	640	AFA	NY	SHARP, MELVIN
173B	30279	DDUCKWCR		5/25/1976	WDR	STR	SW	SW	34	12N	56E	2	IRR					NY	HALSTEAD-FORSGREN RANCHES, INC.
173B	3058			7/29/1914	CAN	STR	SW	SE	12	04N	55E	0	IRR		7/29/1914	0		NY	REISCHKE, HERMAN
173B	3066			8/3/1914	CAN	SPR		SW	14	11N	58E	3	IRR		8/3/1914			NY	MUNSON, C.S.
173B	30978			1/3/1977	DEN	UG	NW	NW	32	10N	57E	0	IRC		1/3/1977	0		NY	LYNN, JEFFREY A.
173B	31188		10630	3/16/1977	CER	UG	SE	SW	23	09N	56E	0.1	IND		3/16/1977	16.112	AFA	NY	MAKOIL, INC.
173B	31254			3/29/1977	CAN	SPR	SW	NE	20	16N	58E	0	MM		3/29/1977	0	AFA	WP	LEWIS, FRANK W.
173B	31255			3/29/1977	CAN	SPR	SW	SE	17	16N	58E	0	MM		3/29/1977	0	AFA	WP	LEWIS, FRANK W.
173B	31323			4/13/1977	WDR	UG	NW	SE	31	10N	57E	0	IRR		4/13/1977	0	AFA	NY	MANZONIE, ADDELLIE
173B	31372		12846	4/25/1977	CER	UG	SW	SE	32	07N	57E	0.08	IRR		4/25/1977	57.91	AFA	NY	CROSS L. RANCHES LLC
173B	31424			5/3/1977	ABR	UG	NW	NE	36	05N	54E	0	IRD		5/3/1977	0	AFA	NY	CONNEALY, MARY ANN
173B	31424	CHANGED BY:	48346		DEN	UG													
173B	31424	CHANGED BY:	48347		CAN	UG													
173B	31425			5/3/1977	ABR	UG	NE	NW	2	04N	54E	0	IRD		5/3/1977	0		NY	PEDDICORD, JUDITH A
173B	31425	CHANGED BY:	48349		CAN	UG													
173B	31425	CHANGED BY:	48348		CAN	UG													
173B	31426			5/3/1977	ABR	UG	NE	NW	35	05N	54E	0	IRD		5/3/1977	0		NY	PEDDICORD, T JEAN
173B	31426	CHANGED BY:	48350		CAN	UG													
173B	31426	CHANGED BY:	48351		CAN	UG													
173B	31427			5/3/1977	ABR	UG	NE	NW	11	04N	54E	0	IRD		5/3/1977	0	AFA	NY	DIERCKS, REBECCA
173B	31427	CHANGED BY:	48352		CAN	UG													
173B	31427	CHANGED BY:	48353		CAN	UG													
173B	31428			5/3/1977	CAN	UG	NW	SE	26	05N	54E	0	IRR		5/3/1977	0		NY	LAST CHANCE MINING COMPANY, INC.
173B	31429			5/3/1977	ABR	UG	NW	NE	1	04N	54E	0	IRD		5/3/1977	0	AFA	NY	PEDDICORD, STEVEN L
173B	31429	CHANGED BY:	48354		DEN	UG													
173B	31429	CHANGED BY:	48355		CAN	UG													
173B	31430			5/3/1977	DEN	UG	NW	NE	12	04N	54E	0	IRD		5/3/1977	0		NY	BRADSHAW, WARREN
173B	31430	CHANGED BY:	48356		DEN	UG													
173B	31430	CHANGED BY:	48357		DEN	UG													
173B	31431			5/3/1977	DEN	UG	NW	NE	24	04N	54E	0	IRD		5/3/1977	0		NY	KOEHLER, JEAN ANN
173B	31431	CHANGED BY:	48359		DEN	UG													
173B	31431	CHANGED BY:	48358		DEN	UG													
173B	31432			5/3/1977	DEN	UG	NW	NE	8	04N	55E	10.8	IRD		5/3/1977	2560	AFA	NY	HOCKERSMITH, R.-CENTRAL NV WATER CO
173B	31433			5/3/1977	DEN	UG	NW	NE	14	04N	54E	0	IRD		5/3/1977	0		NY	LISSOLO, JANET
173B	31433	CHANGED BY:	48360		WDR	UG													
173B	31433	CHANGED BY:	48361		WDR	UG													
173B	31434			5/3/1977	ABR	UG	NW	NE	13	04N	54E	0	IRD		5/3/1977	0	AFA	NY	CONNEALY, MARY ANN
173B	31434	CHANGED BY:	48362		CAN	UG													
173B	31434	CHANGED BY:	48363		CAN	UG													
173B	31435			5/3/1977	DEN	UG	NW	NE	5	04N	55E	10.8	IRD		5/3/1977	2560	AFA	NY	LISSOLO, LEONARD F
173B	31435	CHANGED BY:	48365		DEN	UG													
173B	31435	CHANGED BY:	48364		DEN	UG													
173B	31436			5/3/1977	ABR	UG	NE	NW	6	04N	55E	0	IRD		5/3/1977	0	AFA	NY	DIERCKS, FRANK D
173B	31436	CHANGED BY:	48367		CAN	UG													
173B	31436	CHANGED BY:	48366		CAN	UG													
173B	31437			5/3/1977	DEN	UG	NE	NW	7	04N	55E	0	IRD		5/3/1977	0		NY	TENABO GOLD MINING CO. INC.

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173B	31437	CHANGED BY:	48369		WDR	UG													
173B	31437	CHANGED BY:	48368		WDR	UG													
173B	31438			5/3/1977	DEN	UG	NE	NW	23	04N	54E	10.8	IRD		5/3/1977	2560	AFA	NY	HOCKERSMITH, R.-CENTRAL NV WATER CO
173B	31438	CHANGED BY:	48502		DEN	UG													
173B	31439			5/3/1977	DEN	UG	NW	NE	13	05N	54E	10.8	IRC		5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31440			5/3/1977	DEN	UG	NE	NW	11	05N	54E	10.8	IRC		5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31441			5/3/1977	DEN	UG	NW	NE	25	05N	54E	10.8	IRC		5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31442			5/3/1977	DEN	UG	NW	NE	24	05N	54E	10.8	IRC		5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31443			5/3/1977	DEN	UG	NE	NW	14	05N	54E	10.8	IRC		5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31444			5/3/1977	DEN	UG	NW	NE	12	05N	54E	10.8	IRC		5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31444	CHANGED BY:	48046		CAN	UG													
173B	31444	CHANGED BY:	48048		CAN	UG													
173B	31444	CHANGED BY:	48047		CAN	UG													
173B	31444	CHANGED BY:	48049		CAN	UG													
173B	31445			5/3/1977	DEN	UG	NE	NW	23	05N	54E	10.8	IRC		5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31446			5/3/1977	DEN	UG	NE	NW	19	05N	55E	0	IRR		5/3/1977	0		NY	NUGGET MINING CO. INC.
173B	31447			5/3/1977	DEN	UG	NW	NE	32	05N	55E	0	IRR		5/3/1977	0		NY	NUGGET MINING CO. INC.
173B	31448			5/3/1977	DEN	UG	NW	NE	29	05N	55E	0	IRR		5/3/1977	0		NY	NUGGET MINING CO. INC.
173B	31449			5/3/1977	DEN	UG	NE	NW	31	05N	55E	0	IRR		5/3/1977	0		NY	NUGGET MINING CO. INC.
173B	31450			5/3/1977	DEN	UG	NE	NW	18	05N	55E	10.8	IRD		5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31451			5/3/1977	DEN	UG	NW	NE	17	05N	55E	10.8	IRD		5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31452			5/3/1977	DEN	UG	NW	NE	20	05N	55E	0	IRD		5/3/1977	0		NY	NUGGET MINING CO. INC.
173B	31453			5/3/1977	DEN	UG	NE	NW	30	05N	55E	0	IRR		5/3/1977	0		NY	NUGGET MINING CO. INC.
173B	31891			6/1/1977	CAN	UG		SW	7	08N	56E	2.7	IRC		6/1/1977	640	AFA	NY	COOPER, JAMES R.
173B	31892			6/1/1977	CAN	UG		NW	7	08N	56E	0	IRC		6/1/1977	0	AFA	NY	COOPER, GLORIA J.
173B	31893			6/1/1977	CAN	UG		SW	6	08N	56E	2.7	IRC		6/1/1977	640	AFA	NY	FRY, MICHAEL F.
173B	31894			6/1/1977	CAN	UG		SE	6	08N	56E	0	IRC		6/1/1977	0	AFA	NY	FRY, PAUL J. III
173B	31895			6/1/1977	CAN	UG		NW	6	08N	56E	0	IRC		6/1/1977	0	AFA	NY	FRY, DOLORES LILLIAN
173B	31896			6/1/1977	CAN	UG		NE	6	08N	56E	0	IRC		6/1/1977	0	AFA	NY	FRY, PAUL J. M.D.
173B	31906			6/2/1977	CAN	UG	NW	NE	29	11N	57E	0	IRC		6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31907			6/2/1977	CAN	UG	NW	NE	30	11N	57E	0	IRR		6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31908			6/2/1977	CAN	UG	NW	SE	31	11N	57E	0	IRR		6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31909			6/2/1977	CAN	UG	NW	NE	32	11N	57E	0	IRR		6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31910			6/2/1977	CAN	UG	NW	SE	20	11N	57E	0	IRR		6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31911			6/2/1977	CAN	UG	NW	SE	19	11N	57E	0	IRR		6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31912			6/2/1977	CAN	UG	NW	SE	18	11N	57E	0	IRR		6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31913			6/2/1977	CAN	UG	NW	SE	17	11N	57E	0	IRR		6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31914			6/2/1977	CAN	UG	NW	SE	7	11N	57E	0	IRR		6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31915			6/2/1977	CAN	UG	NW	NE	6	10N	57E	0	IRC		6/2/1977	0	AFA	NY	CHACHAS, GREGORY J.
173B	31933		10340	6/3/1977	CER	SPR	SW	NE	3	15N	58E	0.015	STK		6/3/1977	4.2044	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	31934		10341	6/3/1977	CER	SPR	SW	NE	3	15N	58E	0.015	STK		6/3/1977	4.2044	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	32026			6/13/1977	DEN	UG	NE	NE	14	10N	57E	0	IRC		6/13/1977	0	AFA	NY	JACKSON, ALBERT S
173B	32027			6/13/1977	DEN	UG	SW	NE	14	10N	57E	0	IRC		6/13/1977	0	AFA	NY	JACKSON, AVA MARIE
173B	32028			6/13/1977	DEN	UG	NW	SE	14	10N	57E	0	IRC		6/13/1977	0	AFA	NY	JACKSON, MERLIN
173B	32029			6/13/1977	DEN	UG	SW	SE	14	10N	57E	2.7	IRC		6/13/1977	640	AFA	NY	JACKSON, CARLTON E
173B	32048			6/13/1977	DEN	UG	NW	NW	5	08N	56E	0	IRC		6/13/1977	0	AFA	NY	WHITELY, JAMES S.
173B	32049			6/13/1977	DEN	UG	NE	SE	5	08N	56E	0	IRC		6/13/1977	0	AFA	NY	WHITELY, LINDA
173B	32050			6/13/1977	DEN	UG	NW	SW	5	08N	56E	0	IRC		6/13/1977	0	AFA	NY	WHITELY, PAT
173B	32051			6/13/1977	DEN	UG	NE	NE	5	08N	56E	0	IRC		6/13/1977	0	AFA	NY	WHITELY, KAREN
173B	32052			6/13/1977	DEN	UG	NW	SW	32	09N	56E	0	IRC		6/13/1977	0	AFA	NY	LONG, ROBERT L.
173B	32053			6/13/1977	DEN	UG	NE	SE	32	09N	56E	0	IRC		6/13/1977	0	AFA	NY	LONG, PATRICIA A.
173B	32054			6/13/1977	DEN	UG	NE	NE	8	08N	56E	0	IRR		6/13/1977	0		NY	SINGLER, RONALD M.
173B	32055			6/13/1977	DEN	UG	NE	NE	32	09N	56E	0	IRC		6/13/1977	0		NY	SINGLER, GAYLE LYNN
173B	32240			6/23/1977	WDR	UG	NE	NE	1	10N	56E	0	IRC		6/23/1977	0		NY	FLYING DIAMOND RANCHES INC.
173B	32241			6/23/1977	DEN	UG	SW	NE	1	10N	57E	10.8	IRC		6/23/1977	2560	AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32242			6/23/1977	DEN	UG	SW	NE	2	10N	57E	10.8	IRC		6/23/1977	2560	AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32243			6/23/1977	WDR	UG	NE	NE	3	10N	57E	0	IRC		6/23/1977	0	AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32244			6/23/1977	WDR	UG	NE	NE	4	10N	57E	0	IRC		6/23/1977	0	AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32245			6/23/1977	WDR	UG	NE	NE	5	10N	57E	0	IRC		6/23/1977	0	AFA	NY	FLYING DIAMOND RANCHES INC.

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173B	32246			6/23/1977	WDR	UG	NE	NE	6	10N	57E	0	IRC		6/23/1977	0	AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32247			6/23/1977	WDR	UG	NE	NE	13	11N	56E	10.8	IRC		6/23/1977	0		NY	FLYING DIAMOND RANCHES INC
173B	32248			6/23/1977	WDR	UG	NE	NE	24	11N	56E	10.8	IRC		6/23/1977	0		NY	FLYING DIAMOND RANCHES INC
173B	32249			6/23/1977	WDR	UG	NE	NE	25	11N	56E	10.8	IRC		6/23/1977	0		NY	FLYING DIAMOND RANCHES INC
173B	32250			6/23/1977	WDR	UG	NE	NE	36	11N	56E	10.8	IRC		6/23/1977	0		NY	FLYING DIAMOND RANCHES INC
173B	32251			6/23/1977	DEN	UG	SW	SW	16	11N	57E	2.7	IRC		6/23/1977	640	AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32252			6/23/1977	WDR	UG	NE	NE	17	11N	57E	0	IRC		6/23/1977	0		NY	FLYING DIAMOND RANCHES INC.
173B	32253			6/23/1977	WDR	UG	NE	NE	18	11N	57E	0	IRC		6/23/1977	0	AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32254			6/23/1977	WDR	UG	NE	NE	19	11N	57E	0	IRC		6/23/1977	0	AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32255			6/23/1977	WDR	UG	NE	NE	20	11N	57E	0	IRC		6/23/1977	0	AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32256			6/23/1977	DEN	UG	SW	NE	21	11N	57E	10.8	IRC		6/23/1977	2560	AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32257			6/23/1977	DEN	UG	SW	SW	22	11N	57E	2.7	IRC		6/23/1977	640	AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32258			6/23/1977	DEN	UG	SW	SW	26	11N	57E	2.7	IRC		6/23/1977	640	AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32259			6/23/1977	DEN	UG	SW	NE	27	11N	57E	10.8	IRC		6/23/1977	2560	AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32260			6/23/1977	DEN	UG	SW	NE	28	11N	57E	10.8	IRC		6/23/1977	2560	AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32261			6/23/1977	WDR	UG	NE	NE	29	11N	57E	0	IRC		6/23/1977	0	AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32262			6/23/1977	WDR	UG	NE	NE	30	11N	57E	0	IRC		6/23/1977	0	AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32263			6/23/1977	WDR	UG	NE	NE	31	11N	57E	0	IRC		6/23/1977	0	AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32264			6/23/1977	WDR	UG	NE	NE	32	11N	57E	0	IRC		6/23/1977	0		NY	FLYING DIAMOND RANCHES INC.
173B	32265			6/23/1977	DEN	UG	SW	NE	33	11N	57E	10.8	IRC		6/23/1977	2560	AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32266			6/23/1977	DEN	UG	SW	NE	34	11N	57E	10.8	IRC		6/23/1977	2560	AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32267			6/23/1977	DEN	UG	SW	NE	35	11N	57E	10.8	IRC		6/23/1977	2560	AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32268			6/23/1977	DEN	UG	NE	SW	9	10N	57E	0	IRC		6/23/1977	0	AFA	NY	HANKS, CAROLE K.
173B	32269			6/23/1977	DEN	UG	NE	NW	16	10N	57E	0	IRC		6/23/1977	0		NY	HANKS, CARL J.
173B	32318		13193	6/27/1977	ABR	UG	NW	NW	32	11N	58E	0	IRD		6/27/1977	0	AFA	NY	DAVID WEAVER
173B	32318	CHANGED BY:	83035T		PER	UG													
173B	32319			6/27/1977	ABR	UG	SW	NE	31	11N	58E	0	IRC		6/27/1977	0	AFA	NY	LANI, DONALD
173B	32319	CHANGED BY:	52169		CAN	UG													
173B	32588			6/30/1977	DEN	UG	NW	NE	1	08N	55E	2.7	IRC		6/30/1977	640	AFA	NY	WHITELY, JANE ANNE
173B	32589			6/30/1977	DEN	UG	NW	SE	1	08N	55E	2.7	IRC		6/30/1977	640	AFA	NY	TRUDEAU, ROBERT MICHAEL
173B	32668			7/5/1977	DEN	UG	NW	SE	31	10N	57E	0	IRC		7/5/1977	0		NY	MANZONIE, GAILIN
173B	32669			7/5/1977	DEN	UG		LT01	6	09N	57E	2.7	IRR		7/5/1977	640	AFA	NY	MANZONIE, DENNY
173B	32670			7/5/1977	DEN	UG	NE	SW	6	10N	58E	0	IRC		7/5/1977	0	AFA	NY	PEACOCK, THOMAS WADE
173B	32671			7/5/1977	DEN	UG	NE	SW	6	10N	58E	0	IRC		7/5/1977	0	AFA	NY	PEACOCK, RUE DENISE
173B	32814			7/15/1977	WDR	UG	SE	SW	23	10N	57E	0	IRC		7/15/1977	0		NY	CARPENTER, WANDA J
173B	32815			7/15/1977	WDR	UG	NE	NW	23	10N	57E	2.7	IRC		7/15/1977	0		NY	CARPENTER, DEAN EDWARD
173B	32988			8/1/1977	DEN	UG		LT01	3	10N	57E	10.67	IRC		8/1/1977	2560	AFA	NY	JOHNSON, BUCK & HOFMAN, CARLIN
173B	32989			8/1/1977	DEN	UG		LT01	4	10N	57E	10.67	IRC		8/1/1977	2560	AFA	NY	JOHNSON, BUCK & HOFMAN, CARLIN
173B	32990			8/1/1977	DEN	UG		LT01	5	10N	57E	10.67	IRC		8/1/1977	2560	AFA	NY	JOHNSON, BUCK & HOFMAN, CARLIN
173B	32991			8/1/1977	DEN	UG	NE	NE	9	10N	57E	5.4	IRC		8/1/1977	1280	AFA	NY	JOHNSON, BUCK & HOFMAN, CARLIN
173B	32992			8/1/1977	ABR	UG	NE	NE	8	10N	57E	0	IRC		8/1/1977	0	AFA	NY	NEVADA SETTLERS ASSN
173B	32992	CHANGED BY:	53172		CAN	UG													
173B	32993			8/1/1977	DEN	UG	NE	NE	7	10N	57E	10.67	IRC		8/1/1977	2560	AFA	NY	JOHNSON, BUCK & HOFMAN, CARLIN
173B	32994			8/1/1977	CAN	UG	NE	NE	12	10N	56E	5.4	IRC		8/1/1977	1280	AFA	NY	NEVADA SETTLERS ASSN.
173B	32995			8/1/1977	DEN	UG	NE	NE	17	10N	57E	8	IRC		8/1/1977	1920	AFA	NY	JOHNSON, BUCK & HOFMAN, CARLIN
173B	32996			8/1/1977	DEN	UG	NE	NE	18	10N	57E	10.67	IRC		8/1/1977	2560	AFA	NY	JOHNSON, BUCK & HOFMAN, CARLIN
173B	32997			8/1/1977	ABR	UG	NE	NE	19	10N	57E	0	IRC		8/1/1977	0	AFA	NY	NEVADA SETTLERS ASSN
173B	32997	CHANGED BY:	53171		CAN	UG													
173B	32998			8/1/1977	DEN	UG		LT05	30	10N	57E	0	IRC		8/1/1977	0	AFA	NY	NEVADA SETTLERS ASSN
173B	33060			8/8/1977	DEN	UG	SW	SE	35	05N	55E	2.7	IRC		8/8/1977	640	AFA	NY	SHARP, GERALD H.
173B	33061			8/8/1977	ABR	UG	NE	SE	36	05N	55E	0	IRC		8/8/1977	0	AFA	NY	SHARP, GERALD HOWARD
173B	33061	CHANGED BY:	64062		ABR	UG													
173B	33107			8/10/1977	DEN	UG	NE	NE	12	09N	57E	2.7	IRC		8/10/1977	640	AFA	NY	WALLER, MARCELLA G
173B	33108			8/10/1977	DEN	UG		LT01	1	09N	57E	2.7	IRC		8/10/1977	640	AFA	NY	WALLER, ROBERT A
173B	33109			8/10/1977	DEN	UG	NW	SE	12	09N	57E	2.7	IRC		8/10/1977	640	AFA	NY	HALSTEAD, FRANK
173B	33110			8/10/1977	DEN	UG	SE	SE	36	10N	57E	2.7	IRC		8/10/1977	640	AFA	NY	MAKLEY, RICHARD A.
173B	33225			8/19/1977	CAN	UG	NE	NW	26	05N	54E	0	IRD		8/19/1977	0	AFA	NY	LAST CHANCE MINING CO. INC.
173B	33581			9/12/1977	DEN	UG	NE	SW	33	08N	56E	2.7	IRC		9/12/1977	600	AFA	NY	DEAN, WESLEY GLENN
173B	33582			9/12/1977	DEN	UG	NE	NW	33	08N	56E	2.7	IRC		9/12/1977	560	AFA	NY	DEAN, LILLIE JOE

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Basin	App	Change App.	Cert	File Date	Status[1]	Source[2]	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units[3]	County	Owner of Record
173B	34376			10/25/1977	DEN	UG	NW	NE	6	08N	56E	0	IRC		10/25/1977	0	AFA	NY	FRY, PAUL JOSEPH (M.D.)
173B	34377			10/25/1977	DEN	UG	NW	NW	6	08N	56E	0	IRC		10/25/1977	0	AFA	NY	FRY, DOLORES LILLIAN
173B	34378			10/25/1977	DEN	UG	NW	SE	6	08N	56E	0	IRC		10/25/1977	0	AFA	NY	FRY, PAUL JOSEPH III
173B	34379			10/25/1977	DEN	UG	NW	SW	6	08N	56E	0	IRC		10/25/1977	0	AFA	NY	FRY, MICHAEL FRANCIS
173B	34380			10/25/1977	DEN	UG	NW	NW	7	08N	56E	2.7	IRC		10/25/1977	640	AFA	NY	COOPER, GLORIA JEAN
173B	34381			10/25/1977	DEN	UG	NW	SW	7	08N	56E	2.7	IRC		10/25/1977	640	AFA	NY	COOPER, JAMES RANDALL
173B	34392			10/25/1977	CAN	UG		SW	34	08N	55E	2.7	IRR		10/25/1977	600	AFA	NY	MILLER, ALFRED FRANCES
173B	34416			10/26/1977	DEN	UG	NW	NW	32	11N	57E	10.4	IRC		10/26/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	34417			10/26/1977	DEN	UG	NW	NW	31	11N	57E	0	IRC		10/26/1977	0	AFA	NY	CLEVELAND RANCH INC
173B	34418			10/26/1977	DEN	UG	NW	NW	30	11N	57E	0	IRC		10/26/1977	0	AFA	NY	CLEVELAND RANCH INC
173B	34419			10/26/1977	CAN	UG	NW	NW	17	11N	57E	0	IRC		10/26/1977	0	AFA	NY	CLEVELAND RANCH INC.
173B	34420			10/26/1977	DEN	UG	NW	NW	18	11N	57E	10.4	IRC		10/26/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	34421			10/26/1977	DEN	UG	NW	NW	19	11N	57E	10.4	IRC		10/26/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	34422			10/26/1977	DEN	UG	NW	NW	8	11N	57E	10.4	IRC		10/26/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	34423			10/26/1977	DEN	UG	NW	NW	7	11N	57E	10.4	IRC		10/26/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	34424			10/26/1977	DEN	UG	NW	NW	20	11N	57E	10.4	IRC		10/26/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	34425			10/26/1977	DEN	UG	NW	NW	29	11N	57E	10.4	IRC		10/26/1977	2560	AFA	NY	CLEVELAND RANCH INC
173B	34471			11/1/1977	DEN	UG	NE	NE	22	10N	57E	0	IRC		11/1/1977	0		NY	CARPENTER, DEAN EDWARD
173B	34472			11/1/1977	DEN	UG	SE	SE	22	10N	57E	0	IRC		11/1/1977	0		NY	CARPENTER, WANDA J.
173B	34886			1/17/1978	WDR	UG		LT03	19	09N	57E	1	OTH		1/17/1978	723.98	AFA	NY	NEVADA-DEPARTMENT OF TRANSPORTATION
173B	3585		2019	9/20/1915	CER	SPR	SW	SE	20	08N	37E	0.042	MM		9/20/1915	30.41	AFA	NY	MINERAL COUNTY GOLD MINING
173B	36025			10/12/1978	ABR	UG	SE	SE	15	10N	57E	0	IRR		10/12/1978	0	AFA	NY	HANKS, CARL J.
173B	36025	CHANGED BY:	58805		CER	UG													
173B	3647			10/22/1915	DEN	SPR	NE	NW	32	13N	56E	0	STK		10/22/1915	0	AFA	NY	TOGNONI, J.C.
173B	3664			10/30/1915	DEN	UG	NE	NE	29	10N	57E	0	IRR		10/30/1915	0	AFA	NY	RAILROAD VALLEY LAND AND WATER CO
173B	36700			2/12/1979	WDR	SPR	NE	SE	6	11N	58E	0	STK		2/12/1979	0	AFA	NY	BLM
173B	36817			2/16/1979	DEN	UG		LT04	1	10N	56E	0	IRD		2/16/1979	0		NY	BRADSHAW, NORMA J.
173B	36818			2/16/1979	DEN	UG	NW	SW	36	11N	56E	0	IRD		2/16/1979	0	AFA	NY	BRADSHAW, BARRY K.
173B	36819			2/16/1979	DEN	UG	NW	NW	36	11N	56E	0	IRD		2/16/1979	0	AFA	NY	BRADSHAW, BRADLEY R.
173B	36832			2/20/1979	DEN	UG	NW	SE	30	10N	57E	0	IRD		2/20/1979	0	AFA	NY	LYNN, JEFFERY A
173B	37022			3/14/1979	DEN	STR	SW	NE	7	10N	58E	0	IRD		3/14/1979	0		NY	GUSTAFSON, DEIL O.
173B	37023			3/14/1979	CAN	UG	NW	SE	7	10N	58E	0	IRD		3/14/1979	0	AFA	NY	GUSTAFSON, DEIL O
173B	37024			3/14/1979	DEN	STR	SW	NW	8	10N	58E	0	IRD		3/14/1979	0	AFA	NY	FERROZZO, JAMES
173B	37025			3/14/1979	DEN	UG	NW	NW	8	10N	58E	0	IRD		3/14/1979	0		NY	FERROZZO, JAMES
173B	37250			3/27/1979	DEN	UG	NW	NE	6	10N	58E	0	IRD		3/27/1979	0		NY	LANI, DONA LEE
173B	37452			3/30/1979	CAN	UG	NE	NE	14	10N	57E	0	IRD		3/30/1979	0	AFS	NY	LEAVY, JAMES R.
173B	37453			3/30/1979	CAN	UG		LT10	6	14N	57E	0	IRD		3/30/1979	0		WP	WARD, JO B.
173B	37454			3/30/1979	CAN	UG	NE	NW	14	10N	57E	5.4	IRD		3/30/1979			NY	ZIMBELMAN, EDWARD J.
173B	37455			3/30/1979	CAN	UG	NE	NE	31	15N	57E	0	IRD		3/30/1979	0		WP	WARD, GENE R.
173B	37456			3/30/1979	CAN	UG	NE	NW	31	15N	57E	0	IRD		3/30/1979	0		WP	WARD, G. KAREN
173B	37457			3/30/1979	CAN	UG	NE	NW	32	15N	57E	0	IRD		3/30/1979	0		WP	WARD, CLAYTON D.
173B	37459			3/30/1979	CAN	UG	NE	NE	22	10N	57E	0	IRD		3/30/1979	0		NY	SCOTT, JAMES W.
173B	37496			4/2/1979	DEN	UG	NW	SE	28	05N	55E	0	IRR		4/2/1979	0		NY	PETERSON, REDGE E
173B	37542			4/2/1979	DEN	UG	SE	NE	30	05N	55E	0	IRD		4/2/1979	0		NY	THORNE, M.F.
173B	37548			4/2/1979	DEN	UG	NW	SE	20	05N	55E	0	IRD		4/2/1979	0		NY	THORNE, DEBORAH S.
173B	37557			4/2/1979	DEN	UG	NW	SE	11	10N	56E	0	IRD		4/2/1979	0		NY	BRADSHAW, ANN C.
173B	37558			4/2/1979	DEN	UG	SE	SW	1	10N	56E	0	IRD		4/2/1979	0		NY	BRADSHAW, GORDON L.
173B	37708			4/5/1979	CAN	UG	SE	NE	1	14N	56E	0	IRD		4/5/1979	0		WP	WHITE, HAROLD L.
173B	37742			4/6/1979	DEN	UG	NW	SE	11	10N	57E	0	IRD		4/6/1979	0		NY	GUALCO, PATRICIA
173B	37743			4/6/1979	DEN	UG	NE	NE	11	10N	57E	0	IRD		4/6/1979	0		NY	GUALCO, PATRICIA
173B	37744			4/6/1979	DEN	UG	NE	SW	13	10N	57E	0	IRD		4/6/1979	0		NY	GUALCO, PATRICIA
173B	37745			4/6/1979	DEN	STR	SW	SW	1	10N	57E	0	IRD		4/6/1979	0		NY	GUALCO, PATRICIA
173B	37763			4/9/1979	CAN	UG	SW	NE	21	05N	55E	0	IRD		4/9/1979	0		NY	KINKEAD, JAMES E.
173B	37766			4/9/1979	CAN	UG	SW	NE	22	05N	55E	0	IRD		4/9/1979	0		NY	BIRRELL, NAYDA L.
173B	37768			4/9/1979	DEN	UG	NW	NE	29	05N	55E	0	IRD		4/9/1979	0		NY	WINTER, CARL WM.
173B	37769			4/9/1979	DEN	UG	NW	SE	29	05N	55E	0	IRD		4/9/1979	0		NY	WINTER, JERI
173B	37773			4/9/1979	CAN	UG	SW	NW	21	05N	55E	0	IRD		4/9/1979	0		NY	KINKEAD, HELENA
173B	37774			4/9/1979	DEN	UG	NE	NW	23	05N	55E	6.4	IRD		4/9/1979	1280	AFA	NY	STEWART, HAROLD A
173B	37777			4/9/1979	CAN	UG	SW	NW	22	05N	55E	0	IRD		4/9/1979	0		NY	BIRRELL, PETER R.

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Basin	App	Change App.	Cert	File Date	Status[1]	Source[2]	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units[3]	County	Owner of Record
173B	38565		10929	7/16/1979	CER	UG	NW	NE	12	09N	57E	2.62	IRR		7/16/1979	640.92	AFA	NY	HAMRICK, STEVE & LIBBIE
173B	39893		17643	12/5/1979	CER	UG	NE	SW	28	05N	55E	5.27	IRR	Y	12/5/1979	1208	AFA	NY	CB DEVELOPMENT LC
173B	39894		13194	12/5/1979	CER	UG	SW	SW	28	05N	55E	5.8	IRR	Y	12/5/1979	1190.3	AFA	NY	BEVIS, KAREN SPROUSE
173B	39895			12/5/1979	PER	UG	NW	NW	32	05N	55E	6	IRR	Y	12/5/1979	2400	AFA	NY	SWARTZ, CHRISTOPHER P & BETH LOUANN
173B	40758	27491		2/27/1980	WDR	UG	SW	NE	12	09N	57E	0	IRR		5/29/1973	0	AFA	NY	LYNN, WILLIAM MORGAN
173B	4168			9/26/1916	WDR	STR	NW	SW	2	11N	56E	0.4	IRR		9/26/1916	0		NY	VANOVER, FRANK C.
173B	41740			7/14/1980	WDR	UG	SE	NW	17	10N	58E	0	QM		7/14/1980	0		NY	MX
173B	41743			7/14/1980	WDR	UG	NE	SE	2	03N	52E	0	QM		7/14/1980	0		NY	MX
173B	41744			7/14/1980	WDR	UG	SE	SE	33	08N	55E	0	QM		7/14/1980	0		NY	US GOVERNMENT
173B	4231			11/25/1916	CAN	STR	SW	SW	5	05N	57E	0	IRR		11/25/1916	0	AFS	NY	HUMPHREY REED LAND & CATTLE COMPANY
173B	4237			12/1/1916	CAN	SPR				08N	54E	0.025	DOM		12/1/1916	0		NY	TOGNONI, J.C.
173B	4238			12/1/1916	CAN	SPR			16	07N	55E	0	MM		12/1/1916	0		NY	TOGNONI, J.C.
173B	42918			12/5/1980	DEN	SPR	NW	SE	34	16N	57E	0.15	MM		12/5/1980			WP	GREAT WEST LAND AND MINING COMPANY
173B	42938			12/10/1980	DEN	SPR	SW	NE	20	16N	58E	0.03	MM		12/10/1980	0		WP	LEWIS, FRANK W.
173B	42939			12/10/1980	DEN	SPR	SW	SE	17	16N	58E	0.03	MM		12/10/1980	0		WP	LEWIS, FRANK W.
173B	43117			1/19/1981	CAN	UG				04N	56E	0	MM		1/19/1981	0		NY	MANZENITA MINING CORPORATION
173B	43455			4/3/1981	CAN	UG	NE	NW	33	10N	57E	0	IND		4/3/1981	0		NY	WEXPRO COMPANY
173B	4411			4/27/1917	WDR	SPR	NE	NE	3	15N	58E	1	MM		4/27/1917	0		WP	READ, WILLIAM M.
173B	44758			10/29/1981	ABR	UG	SE	SW	35	09N	58E	0	REC		10/29/1981	0	AFA	NY	BLM
173B	44758	CHANGED BY:	48445		CER	UG													
173B	44765		11350	10/29/1981	CER	UG	SE	NW	18	09N	58E	0.004	STK		10/29/1981	3.3451	AFA	NY	BLM
173B	44766			10/29/1981	WDR	UG	NE	NW	14	09N	56E	0	STK		10/29/1981	0	AFA	NY	BLM
173B	44770			10/29/1981	WDR	UG	SW	NE	35	06N	56E	0	STK		10/29/1981	0	AFA	NY	BLM
173B	44771			10/29/1981	DEN	UG	SW	SE	18	06N	56E	0.01	STK		10/29/1981	7.24	AFA	NY	BLM
173B	4511			7/14/1917	CAN	SPR	SW	SE	16	07N	55E	5	MM		7/14/1917			NY	TOGNONI, J.C.
173B	4512		1143	7/14/1917	CER	SPR	SE	SW	34	08N	54E	0.025	DOM		7/14/1917	0	AFA	NY	J.C. TOGNONI
173B	45247		11854	1/19/1982	CER	UG	SW	NE	2	03N	52E	0.018	STK		1/19/1982	13.043	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983 TRUST
173B	4526			7/26/1917	CAN	STR				04N	56E	1	MM		7/26/1917			NY	GOODMAN, J. HENRY
173B	4533			7/30/1917	PER	STR	NW	SE	3	03N	52E	0	IRR		7/30/1917	10000	AFA	NY	ALLERD, E.R.
173B	45362			2/22/1982	CAN	UG			21	09N	56E	0	IRD		2/22/1982	0		NY	CHRISTMAN, DALLES
173B	45363			2/22/1982	CAN	UG				09N	56E	0	IRD		2/22/1982	0		NY	CHRISTMAN, CHARLES
173B	45364			2/22/1982	DEN	UG	SE	NE	2	09N	56E	0	IRD		2/22/1982	0	AFA	NY	LOGAN, RICHARD
173B	45365			2/22/1982	DEN	UG	NE	SW	2	09N	56E	3.2	IRD		2/22/1982	1280	AFA	NY	STEVENS, BRUCE
173B	45366			2/22/1982	DEN	UG	NE	SE	11	09N	56E	0	IRD		2/22/1982	0	AFA	NY	ZIMMERMAN, F.M.
173B	45367			2/22/1982	DEN	UG	NE	NW	11	09N	56E	0	IRD		2/22/1982	0		NY	ZIMMERMAN, RUBY
173B	45368			2/22/1982	DEN	UG	SW	SW	29	09N	56E	0	IRD		2/22/1982	0		NY	MUNRO, ROSALIND
173B	45369			2/22/1982	DEN	UG	NE	SE	22	09N	56E	0	IRD		2/22/1982	0	AFA	NY	CLINCH, BENNETT J.
173B	45370			2/22/1982	DEN	UG	NE	NE	29	09N	56E	0	IRD		2/22/1982	0	AFA	NY	SILVA, PAUL
173B	45371			2/22/1982	DEN	UG	NE	SE	20	09N	56E	0	IRD		2/22/1982	0	AFA	NY	RANDALL, ED
173B	45372			2/22/1982	DEN	UG	NE	SE	23	09N	56E	0	IRD		2/22/1982	0	AFA	NY	OTIS, ROBERT M.
173B	45373			2/22/1982	DEN	UG	NE	SE	26	09N	56E	0	IRD		2/22/1982	0	AFA	NY	PROCTOR, ROBERT
173B	45450			3/15/1982	CAN	UG	NW	NE	3	11N	56E	0	IRR		3/15/1982	0	AFA	NY	WENTZ, JOANNA MAY
173B	45947			7/19/1982	DEN	UG	NE	NE	4	09N	56E	0	IRD		7/19/1982	0	AFA	NY	OTIS, ROBERT G.
173B	45948			7/19/1982	DEN	UG	SE	NE	22	09N	56E	0	IRD		7/19/1982	0	AFA	NY	OTIS, TERRY
173B	45949			7/19/1982	DEN	UG	SE	SW	23	09N	56E	0	IRD		7/19/1982	0	AFA	NY	OTIS, TIM E.
173B	45950			7/19/1982	DEN	UG	NE	NW	4	09N	56E	0	IRD		7/19/1982	0	AFS	NY	OTIS, RUTH EVAN
173B	4677		8232	11/5/1917	CER	STR	NE	NW	3	11N	56E	0.158	IRR		11/5/1917	77	AFA	NY	NORMA J. BRADSHAW (40%), KARL TODD BRADSHAW(UNDIV.20%), JODY MAE BRADSHAW(UNDIV.20%), NORMA J. BRADSHAW(UNDIV.20%)
173B	47255			9/19/1983	CAN	UG		E2	26	09N	56E	7.8	IRD		9/19/1983	0		NY	SILVA, ALICE
173B	47281		12326	9/30/1983	CER	UG	SW	SE	1	06N	54E	0.03	STK		9/30/1983	21.728	AFA	NY	CROSS L. RANCHES, LLC
173B	47282		12327	9/30/1983	CER	UG	NW	SE	14	05N	54E	0.03	STK		9/30/1983	21.728	AFA	NY	CROSS L RANCHES, LLC
173B	47365			10/28/1983	CAN	UG			20	09N	56E	5.4	IRD		10/28/1983	1280	AFS	NY	LOGAN, ROBERT L.
173B	47374			11/1/1983	CAN	UG			14	09N	56E	0	IRD		11/1/1983	0		NY	KIMBALL, ROBERT L.
173B	47392			11/7/1983	CAN	UG	NE	NW	24	07N	54E	0.009	STK		11/7/1983	2.7927	AFS	NY	RUSSELL, DAN
173B	47393			11/7/1983	CAN	UG	NW	NW	34	09N	55E	0.009	STK		11/7/1983	2.7927	AFS	NY	RUSSELL, DAN
173B	47394			11/7/1983	CAN	UG	SE	NW	14	09N	55E	0.009	STK		11/7/1983	2.7927	AFS	NY	RUSSELL, DAN

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Basin	App	Change App.	Cert	File Date	Status[1]	Source[2]	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units[3]	County	Owner of Record
173B	4755		1110	12/4/1917	CER	STR	SE	SW	5	05N	57E	0.45	IRR		12/4/1917	135.09	AFA	NY	CROSS L. RANCHES LLC
173B	47622			1/30/1984	DEN	UG	NE	SE	26	05N	54E	5.4	IRD		1/30/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47623			1/30/1984	DEN	UG	NE	SE	27	05N	54E	5.4	IRD		1/30/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47624			1/30/1984	DEN	UG	SW	NE	34	05N	54E	5.4	IRD		1/30/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47625			1/30/1984	DEN	UG	NE	SW	22	05N	54E	5.4	IRD		1/30/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47626			1/30/1984	DEN	UG	NE	SW	15	05N	54E	5.4	IRD		1/30/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47627			1/30/1984	DEN	UG	NE	SW	10	05N	54E	5.4	IRD		1/30/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47628			1/30/1984	DEN	UG	SW	NE	4	04N	54E	5.4	IRD		1/30/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47629			1/30/1984	DEN	UG	SW	NE	6	04N	54E	5.4	IRD		1/30/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47630			1/30/1984	DEN	UG	NW	SE	7	04N	54E	5.4	IRD		1/30/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47631			1/30/1984	DEN	UG	NW	SW	8	04N	54E	5.4	IRD		1/30/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47632			1/30/1984	DEN	UG	NW	NE	16	04N	54E	5.4	IRD		1/30/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47633			1/30/1984	DEN	UG	NW	NE	15	04N	54E	5.4	IRD		1/30/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47666			2/8/1984	CAN	UG	SE	NW	6	05N	55E	5.4	IRD		2/8/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47667			2/8/1984	CAN	UG	SE	NW	15	05N	55E	5.4	IRD		2/8/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47668			2/8/1984	CAN	UG	NW	SE	16	05N	55E	5.4	IRD		2/8/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47669			2/8/1984	CAN	UG	SE	NW	9	05N	55E	5.4	IRD		2/8/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47670			2/8/1984	CAN	UG	NE	SW	8	05N	55E	5.4	IRD		2/8/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47671			2/8/1984	CAN	UG	NE	NW	8	05N	55E	5.4	IRD		2/8/1984	1280	AFA	NY	CENTRAL NEVADA WATER COMPANY
173B	47733			2/27/1984	CAN	UG	NW	NE	33	10N	56E	0	IRD		2/27/1984	0		NY	ANDERSON, AUDRIA LORRAINE
173B	47934			3/26/1984	CAN	UG	NE	NW	31	15N	57E	5.4	IRD		3/26/1984	1280	AFA	WP	WARD, G. KAREN
173B	47935			3/26/1984	CAN	UG	NE	NE	31	15N	57E	5.4	IRD		3/26/1984	1280	AFA	WP	WARD, GENE R.
173B	48046	31444		5/21/1984	CAN	UG	SW	SE	11	05N	54E	2.12	IRR		5/3/1977	502.64	AFA	NY	SILVER SPIKE EXPLORATION CO. INC.
173B	48047	31444		5/21/1984	CAN	UG	SW	SW	12	05N	54E	2.12	IRR		5/3/1977	502.64	AFA	NY	SILVER SPIKE EXPLORATION CO. INC.
173B	48048	31444		5/21/1984	CAN	UG	SW	NE	14	05N	54E	2.12	IRR		5/3/1977	502.64	AFA	NY	SILVER SPIKE EXPLORATION CO. INC.
173B	48049	31444		5/21/1984	CAN	UG	SW	NW	13	05N	54E	2.12	IRR		5/3/1977	502.64	AFA	NY	SILVER SPIKE EXPLORATION CO. INC.
173B	4817			1/4/1918	CAN	STR		NW	24	06N	57E	0	IRR		1/4/1918	0		NY	EVANS, JOHN W.
173B	48346	31424		9/6/1984	DEN	UG	NE	SW	36	05N	54E	5.4	IRD		5/3/1977	1280	AFA	NY	CONNEALY, ROBERT E.
173B	48347	31424		9/6/1984	CAN	UG	NE	SE	3	04N	54E	5.4	IRD		5/3/1977	1280	AFA	NY	CONNEALY, MARY ANN
173B	48348	31425		9/6/1984	CAN	UG	NE	NW	7	04N	55E	5.4	IRD		5/3/1977	1280	AFA	NY	PEDDICORD, THOMAS E.
173B	48349	31425		9/6/1984	CAN	UG	NE	SW	7	04N	55E	5.4	IRD		5/3/1977	1280	AFA	NY	PEDDICORD, JUDITH A.
173B	48350	31426		9/6/1984	CAN	UG	NE	NW	14	04N	54E	5.4	IRD		5/3/1977	1280	AFA	NY	PEDDICORD, THOMAS L.
173B	48351	31426		9/6/1984	CAN	UG	NE	SW	14	04N	54E	5.4	IRD		5/3/1977	1280	AFA	NY	PEDDICORD, T. JEAN
173B	48352	31427		9/6/1984	CAN	UG	NE	NW	16	04N	54E	5.4	IRD		5/3/1977	1280	AFA	NY	DIERCKS, ROGER F.
173B	48353	31427		9/6/1984	CAN	UG	NE	SW	16	04N	54E	5.4	IRD		5/3/1977	1280	AFA	NY	DIERCKS, REBECCA
173B	48354	31429		9/6/1984	DEN	UG	SE	NW	7	04N	54E	5.4	IRD		5/3/1977	1280	AFA	NY	PEDDICORD, STEVEN L.
173B	48355	31429		9/6/1984	CAN	UG	SE	SW	7	04N	54E	5.4	IRD		5/3/1977	1280	AFA	NY	TOM, CHRISTINE
173B	48356	31430		9/6/1984	DEN	UG	SW	NE	27	05N	54E	5.4	IRD		5/3/1977	1280	AFA	NY	LISSOLO, STEPHANA J.
173B	48357	31430		9/6/1984	DEN	UG	NW	NW	26	05N	54E	5.4	IRD		5/3/1977	1280	AFA	NY	BRADSHAW, WARREN
173B	48358	31431		9/6/1984	DEN	UG	SE	NW	26	04N	53E	5.4	IRD		5/3/1977	1280	AFA	NY	KOEHLER, RUSSELL C.
173B	48359	31431		9/6/1984	DEN	UG	SE	SW	26	04N	53E	5.4	IRD		5/3/1977	1280	AFA	NY	KOEHLER, JEAN ANN
173B	48360	31433		9/6/1984	WDR	UG	NE	SW	3	03N	53E	5.4	IRD		5/3/1977	1280	AFA	NY	LISS0LO, LELAND
173B	48361	31433		9/6/1984	WDR	UG	NE	NW	10	03N	53E	5.4	IRD		5/3/1977	1280	AFA	NY	LISS0LO, JANET
173B	48362	31434		9/6/1984	CAN	UG	NE	NW	7	03N	53E	5.4	IRD		5/3/1977	1271.1	AFA	NY	BOYER, MARY A.
173B	48363	31434		9/6/1984	CAN	UG	NE	NW	8	03N	53E	5.4	IRD		5/3/1977	1280	AFA	NY	BOYER, GARY D.
173B	48364	31435		9/6/1984	DEN	UG	NE	SE	31	04N	53E	5.4	IRD		5/3/1977	1280	AFA	NY	WILES, TERRIE L.
173B	48365	31435		9/6/1984	DEN	UG	NE	SW	13	05N	54E	5.4	IRD		5/3/1977	1280	AFA	NY	LISSOLO, LEONARD F.
173B	48366	31436		9/6/1984	CAN	UG	NE	NW	14	04N	53E	5.4	IRD		5/3/1977	1280	AFA	NY	DIERCKS, FRANK D.
173B	48367	31436		9/6/1984	CAN	UG	NE	SW	14	04N	53E	5.4	IRD		5/3/1977	1280	AFA	NY	DIERCKS, IRENE
173B	48368	31437		9/6/1984	WDR	UG	NW	SW	1	03N	53E	5.4	IRD		5/3/1977	1280	AFA	NY	CRANSTON, GARY
173B	48369	31437		9/6/1984	WDR	UG	NE	NW	12	03N	53E	5.4	IRD		5/3/1977	1280	AFA	NY	CRANSTON, COLLETTIE E.
173B	48445	44758	12223	9/28/1984	CER	UG	SE	SW	35	09N	56E	0.07	REC		10/29/1981	50.668	AFA	NY	BLM
173B	48502	31438		10/19/1984	DEN	UG	NE	NE	31	04N	53E	5.4	IRD		5/3/1977	1280	AFA	NY	LARSON, ILA A.
173B	4867			1/25/1918	CAN	STR	NE	SW	31	10N	57E	0	IRR		1/25/1918	0		NY	MUNSON, C.S.
173B	4874			1/30/1918	WDR	SPR	SE	SE	14	14N	56E	1.6	IRR		1/30/1918	640	AFS	WP	EUREAKA LAND AND STOCK CO.
173B	4878			1/30/1918	CAN	STR	SE	SE	14	14N	56E	1.6	IRR		1/30/1918	640	AFS	WP	EUREAKA LAND AND STOCK CO.
173B	4879			1/30/1918	CAN	STR	SW	NW	25	14N	56E	0	IRR		1/30/1918	0	AFS	WP	EUREKA LAND AND STOCK CL.
173B	48877			2/25/1985	WDR	UG	SE	NW	24	09N	56E	0.25	IND		2/25/1985	35.354	AFA	NY	WESTERN AVENUE PROPERTIES
173B	49051			5/16/1985	ABR	UG	NE	SE	24	09N	56E	0	IND		5/16/1985	0	AFA	NY	PETRO SOURCE CORP.

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Basin	App	Change App.	Cert	File Date	Status[1]	Source[2]	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units[3]	County	Owner of Record
173B	49051	CHANGED BY:	55152		PER	UG													
173B	49092			5/30/1985	CAN	UG	NE	NW	33	10N	57E	0.2	STK		5/30/1985			NY	BLM
173B	49649		13415	1/23/1986	CER	UG	NE	NW	33	10N	57E	0.034	STK		1/23/1986	23.876	AFA	NY	BLM
173B	49747			3/10/1986	CAN	UG	NE	NW	10	03N	53E	5.4	IRD		3/10/1986	1280	AFA	NY	LISSOLO, JANET
173B	49748			3/10/1986	CAN	UG	NW	SW	1	03N	53E	5.4	IRD		3/10/1986	1280	AFA	NY	CRANSTON, GARY
173B	49749			3/10/1986	CAN	UG	NE	NW	12	03N	53E	5.4	IRD		3/10/1986	1280	AFA	NY	CRANSTON, COLLETTIE E.
173B	49750			3/10/1986	CAN	UG	NE	SW	3	03N	53E	5.4	IRD		3/10/1986	1280	AFA	NY	LISSOLO, LELAND
173B	50245			10/2/1986	CAN	UG	NW	NW	28	15N	57E	1	MM		10/2/1986	723.95	AFA	WP	MX
173B	50246			10/2/1986	CAN	UG	NE	NW	28	15N	57E	1	MM		10/2/1986	723.95	AFA	WP	MX
173B	51114			7/15/1987	WDR	UG	NW	NW	27	15N	57E	1	MM		7/15/1987	723.95	AFA	WP	MX
173B	51115			7/15/1987	WDR	UG	SW	SE	28	15N	57E	1	MM		7/15/1987	723.95	AFA	WP	MX
173B	51116			7/15/1987	WDR	UG	SE	NE	28	15N	57E	1	MM		7/15/1987	723.95	AFA	WP	MX
173B	51129		14757	7/20/1987	CER	UG	NE	SW	23	06N	56E	0.3	IRR		7/20/1987	175.2	AFA	NY	CROSS L. RANCHES LLC
173B	51262			9/2/1987	CAN	SPR	SE	SW	33	15N	57E	1	MM		9/2/1987	723.95	AFA	WP	U.S.M.X. OF NEVADA, INC.
173B	51423			10/8/1987	WDR	UG	NW	SW	33	15N	57E	0.5	QM		10/8/1987	22.403	AFA	WP	MX
173B	5156			7/17/1918	CAN	SPR				06N	54E	0	UKN		7/17/1918	0		NY	SHARP, H.L.
173B	51777			1/20/1988	PER	SPR	SE	SW	33	15N	57E	4	IRR		1/20/1988	1280	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	51778		13698	1/20/1988	CER	SPR	SE	SW	33	15N	57E	0.031	STK		1/20/1988	22.741	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	52143		15255	5/27/1988	CER	SPR	NW	NW	21	04N	52E	0.008	STK		5/27/1988	5.6468	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983 TRUST
173B	52144		15256	5/27/1988	CER	SPR	NW	SE	20	04N	52E	0.002	STK		5/27/1988	1.5958	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983 TRUST
173B	52146		15222	5/27/1988	CER	SPR	NW	SW	6	04N	53E	0.003	STK		5/27/1988	2.3937	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983 TRUST
173B	52147		15223	5/27/1988	CER	SPR	NE	SW	12	04N	52E	0.003	STK		5/27/1988	2.3937	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983 TRUST
173B	52169	32319		5/27/1988	CAN	UG	NE	NE	30	11N	58E	2.7	IRR		6/27/1977	640	AFA	NY	LANI, DONALD
173B	52170			5/27/1988	DEN	SPR	NW	NE	15	11N	58E	3	IRD		5/27/1988	2240	AFA	NY	LANI, DONALD
173B	5291			10/17/1918	DEN	SPR		LT10	13	42N	55E	0.1	IRR		10/17/1918	0		NY	GOICOECHEA, JULIANA
173B	5292			10/17/1918	DEN	SPR		LT04	13	42N	55E	0.4	IRR		10/17/1918	0	AFA	NY	GOICOECHEA, JULIANA
173B	53159		14811	4/21/1989	CER	STR	SE	SE	14	14N	56E	0.031	STK		4/21/1989	22.403	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	53160			4/21/1989	PER	SPR	SE	SE	14	14N	56E	4	IRR		4/21/1989	2895.9	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	53161			4/21/1989	PER	SPR	SE	NW	25	14N	56E	2	IRR		4/21/1989	1448	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	53162			4/21/1989	PER	SPR	NW	SW	25	14N	56E	1	IRR		4/21/1989	724	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	53163			4/21/1989	PER	SPR	SE	NW	36	14N	56E	0.5	IRR		4/21/1989	362	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	53171	32997		4/24/1989	CAN	UG		LT05	19	10N	57E	5	IRC		10/22/1993	1163	AFA	NY	NEVADA SETTLERS ASSN.
173B	53172	32992		4/24/1989	CAN	UG	NE	NW	8	10N	57E	5.4	IRC		11/14/1991	1280	AFA	NY	NEVADA SETTLERS ASSN.
173B	53389		14470	6/16/1989	FOR	UG	SW	NE	35	15N	56E	0	MM		9/13/1993	0	AFA	WP	LEMICH, MIKE
173B	53390			6/16/1989	WDR	UG	NW	SW	10	15N	56E	0	MM		6/16/1989			WP	ALTA GOLD COMPANY
173B	53516			6/29/1989	DEN	SPR	NW	NW	21	04N	52E	0.1	REC		6/29/1989	0		NY	FALLINI, JOE B. JR.
173B	53517			6/29/1989	DEN	SPR	NW	SE	20	04N	52E	0.1	REC		6/29/1989	0		NY	FALLINI, JOE B. JR.
173B	53524			6/29/1989	DEN	SPR	NE	SW	12	04N	52E	0.1	REC		6/29/1989	0		NY	FALLINI, JOE B. JR.
173B	53526			6/29/1989	DEN	SPR	NW	SW	6	04N	53E	0.1	REC		6/29/1989	0		NY	FALLINI, JOE B. JR.
173B	53541			6/29/1989	DEN	UG	SW	NE	2	03N	52E	0.1	REC		6/29/1989	72.39	AFA	NY	FALLINI, JOE B. JR.
173B	53543			6/29/1989	DEN	UG	SW	NW	19	04N	52E	0.1	REC		6/29/1989	72.39	AFA	NY	FALLINI, JOE B. JR.
173B	53555			6/29/1989	CAN	STR	NE	SW	3	03N	52E	0.1	REC		6/29/1989	0		NY	FALLINI, JOE B. JR.
173B	53557			6/29/1989	DEN	STR	SE	NW	3	03N	52E	0.1	REC		6/29/1989	0		NY	FALLINI, JOE B. JR.
173B	53558			6/29/1989	CAN	STR	NE	SW	3	03N	52E	0.1	REC		6/29/1989	0		NY	FALLINI, JOE B. JR.
173B	53585			6/29/1989	DEN	UG	SW	SE	29	04N	53E	0.1	REC		6/29/1989	72.39	AFA	NY	FALLINI, JOE B. JR.
173B	53965			10/17/1989	RFP	UG	NE	SW	4	06N	57E	6	MUN		10/17/1989	4344	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53966			10/17/1989	RFP	UG	SE	NE	13	06N	56E	6	MUN		10/17/1989	4344	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53967			10/17/1989	RFP	UG	SE	SW	26	06N	56E	6	MUN		10/17/1989	4344	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53968			10/17/1989	RFP	UG	NE	SW	3	05N	56E	6	MUN		10/17/1989	4344	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53969			10/17/1989	RFP	UG	NE	SW	20	05N	56E	6	MUN		10/17/1989	4344	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53970			10/17/1989	RFP	UG	NE	SW	13	04N	54E	6	MUN		10/17/1989	4344	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53971			10/17/1989	RFP	UG	SE	SW	35	04N	53E	6	MUN		10/17/1989	4344	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53972			10/17/1989	RFP	UG	SE	SE	30	07N	55E	6	MUN		10/17/1989	4344	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53973			10/17/1989	RFP	UG	SW	SW	27	06N	54E	6	MUN		10/17/1989	4344	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53974			10/17/1989	RFP	UG	SE	NW	8	04N	54E	6	MUN		10/17/1989	4344	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY

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Basin	App	Change App.	Cert	File Date	Status[1]	Source[2]	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units[3]	County	Owner of Record
173B	53975			10/17/1989	RFP	UG	SE	NW	24	07N	57E	10	MUN		10/17/1989	7240	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53976			10/17/1989	RFP	UG	SE	SW	19	06N	57E	10	MUN		10/17/1989	7240	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53977			10/17/1989	RFP	UG	NW	NE	19	05N	57E	10	MUN		10/17/1989	7240	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53978			10/17/1989	RFP	UG	NE	SW	6	04N	56E	10	MUN		10/17/1989	7240	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53979			10/17/1989	RFP	UG	NE	SE	3	04N	55E	10	MUN		10/17/1989	7240	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53980			10/17/1989	RFP	UG	SE	SE	13	03N	54E	10	MUN		10/17/1989	7240	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53985			10/17/1989	RFP	UG	SE	NE	3	07N	57E	6	MUN		10/17/1989	4344	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53986			10/17/1989	RFP	UG	SE	NW	15	07N	57E	6	MUN		10/17/1989	4344	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	54067			10/17/1989	WDR	UG	SE	SW	6	15N	57E	10	MUN		10/17/1989	0	AFA	WP	LAS VEGAS VALLEY WATER DISTRICT
173B	54132			11/1/1989	EXP	UG	NE	NW	35	09N	57E	0.5	IND		11/1/1989	80.651	AFA	NY	HANKS, CARL J.
173B	55152	49051		8/3/1990	PER	UG	SE	SE	24	09N	56E	0.5	IND		10/19/1999	32.254	AFA	NY	PETRO SOURCE CORP.
173B	55153			8/3/1990	DEN	UG	SE	SE	24	09N	56E	0.05	IND		8/3/1990	24.183	AFA	NY	PETRO SOURCE CORP.
173B	55154			8/3/1990	DEN	UG	NE	SE	24	09N	56E	0.112	IND		8/3/1990	48.397	AFA	NY	PETRO SOURCE CORP.
173B	55155			8/3/1990	DEN	UG	SE	SE	24	09N	56E	0.112	IND		8/3/1990	48.397	AFA	NY	PETRO SOURCE CORP.
173B	5520			5/31/1919	CAN	SPR	NW	SE	34	16N	57E	0	MM		5/31/1919	0	AFA	WP	HARWOOD, W.M.
173B	5661		948	8/9/1919	CER	SPR	NE	SW	24	06N	54E	0.02	STK		8/9/1919	14.424	AFA	NY	GRUBE, B.H.
173B	5663		950	8/9/1919	CER	SPR	NW	NE	12	06N	54E	0.02	STK		8/9/1919	14.424	AFA	NY	GRUBE, B.H.
173B	5669			8/14/1919	CAN	SPR	NE	NE	35	16N	57E	0	MM		8/14/1919	0	AFA	WP	KELLER, KENT E.
173B	569			7/15/1907	CAN	STR			28	04N	55E	0	PWR		7/15/1907	0		NY	BUSH, BURT
173B	57465	26433		4/21/1992	PER	UG	SE	SE	33	05N	55E	2.4	IRR	Y	7/20/2012	1280	AFA	NY	GIBSON, GEORGIA LEE
173B	57465	CHANGED BY:	75132		WDR	UG								Y					
173B	57465	CHANGED BY:	75259		WDR	UG								Y					
173B	57465	CHANGED BY:	69904		ABR	UG								Y					
173B	57466	26435		4/21/1992	PER	UG	NW	NW	33	05N	55E	5.23	IRR	Y	7/20/2012	1240	AFA	NY	GIBSON, GEORGIA LEE
173B	5831			11/1/1919	DEN	SPR	NW	SW	5	12N	56E	0	IRR		11/1/1919	0		NY	TOGNONI, J.R.
173B	58492			1/21/1993	PER	SPR	SW	NE	30	11N	58E	0.05	IRR		1/21/1993	36.2	AFA	NY	DAVID WEAVER
173B	58492	CHANGED BY:	82040		RFA	SPR													
173B	58805	36025	15009	5/4/1993	CER	UG	SE	SE	15	10N	57E	2.79	IRR	Y	10/12/1978	610.88	AFA	NY	GROVER, JUDITH ELLEN AND DANA B
173B	6062		625	4/22/1920	CER	SPR	SW	NW	23	15N	57E	0.001	STK		4/22/1920	0.5524	AFA	WP	ROSEVEAR, JOSEPH
173B	61221			5/10/1995	PER	UG	NE	NE	27	10N	57E	5.4	IRR		1/10/2010	1280	AFA	NY	JACQUELYN S. REYNOLDS
173B	6165		1206	6/10/1920	CER	UG	NW	NW	32	10N	57E	0.3687	IRR		6/10/1920	176.98	AFA	NY	RWD CURRANT CREEK, LLC & DIELEMAN, RICHARD W.
173B	6165	CHANGED BY:	76986T		WDR	UG													
173B	6165	CHANGED BY:	81693		RFA	UG													
173B	6165	CHANGED BY:	77160T		EXP	UG													
173B	6183			6/19/1920	DEN	SPR	SW	NE	5	12N	56E	0	IRR		6/19/1920	0		NY	TOGNONI, J.C.
173B	6256			9/10/1920	CAN	SPR	NE	NW	16	04N	56E	0.1	MM		9/10/1920	0		NY	MORSE, FRED O.
173B	6294			10/5/1920	CAN	SPR	NE	NE	35	16N	57E	2	MM		10/5/1920			WP	ARGYLE MINING CO.
173B	6331			11/22/1920	DEN	SPR	NE	NE	35	16N	57E	0	MM		11/22/1920	0		WP	KELLER, KENT E.
173B	63707		16144	1/2/1998	CER	UG	NW	SE	8	10N	58E	0.0624	QM		1/2/1998	0.2427	AFA	NY	NYE COUNTY COMMISSIONERS
173B	6372			1/10/1921	CAN	STR	NE	SE	19	05N	56E	0	IRR		1/10/1921	0		NY	TIDBALL, GUY
173B	6392			1/31/1921	CAN	STR	NW	SW	7	04N	55E	0	IRR		1/31/1921	0		NY	GARRETT, EMERY E.
173B	64062	33061		4/24/1998	ABR	UG	SE	SE	34	06N	56E	0	IRR		8/8/1977	0	AFA	NY	SHARP, GERALD HOWARD
173B	64062	CHANGED BY:	76988		PER	UG													
173B	64126			5/18/1998	PER	UG	NE	NW	35	09N	57E	0.006	STK		5/18/1998	4.4806	AFA	NY	DECATUR 215, LLC
173B	64127			5/18/1998	PER	STR	SE	NW	8	10N	58E	3.9	IRR		5/18/1998	1248	AFA	NY	MANZONIE, JOHN DENNIS
173B	65509			9/22/1999	DEN	UG	NW	NE	10	04N	53E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65510			9/22/1999	DEN	UG	NW	SE	10	04N	53E	5.4	IRD		9/22/1999	1280	AFA	NY	CSS COMPANY
173B	65511			9/22/1999	DEN	UG	NW	NE	11	04N	53E	5.4	IRD		9/22/1999	1280	AFA	NY	CSS COMPANY
173B	65512			9/22/1999	DEN	UG	NW	SE	11	04N	53E	5.4	IRD		9/22/1999	1280	AFA	NY	CSS COMPANY
173B	65513			9/22/1999	DEN	UG	NW	NE	12	04N	53E	5.4	IRD		9/22/1999	1280	AFA	NY	CSS COMPANY
173B	65514			9/22/1999	DEN	UG	NW	SE	12	04N	53E	5.4	IRD		9/22/1999	1280	AFA	NY	CSS COMPANY
173B	65515			9/22/1999	DEN	UG	NW	NE	13	04N	53E	5.4	IRD		9/22/1999	1280	AFA	NY	CSS COMPANY
173B	65516			9/22/1999	DEN	UG	NW	SE	13	04N	53E	5.4	IRD		9/22/1999	1280	AFA	NY	CSS COMPANY
173B	65517			9/22/1999	DEN	UG	NW	NE	14	04N	53E	5.4	IRD		9/22/1999	1280	AFA	NY	CSS COMPANY
173B	65518			9/22/1999	DEN	UG	NW	SE	14	04N	53E	5.4	IRD		9/22/1999	1280	AFA	NY	CSS COMPANY
173B	65519			9/22/1999	DEN	UG	NW	NE	15	04N	53E	5.4	IRD		9/22/1999	1280	AFA	NY	CSS COMPANY
173B	65520			9/22/1999	DEN	UG	NW	SE	15	04N	53E	5.4	IRD		9/22/1999	1280	AFA	NY	CSS COMPANY
173B	65521			9/22/1999	DEN	UG	NW	NE	7	04N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY

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173B	65522			9/22/1999	DEN	UG	NW	SE	7	04N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65523			9/22/1999	DEN	UG	NW	NE	9	05N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65524			9/22/1999	DEN	UG	NW	SE	9	05N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65525			9/22/1999	DEN	UG	NW	NE	10	05N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65526			9/22/1999	DEN	UG	NW	SE	10	05N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65527			9/22/1999	DEN	UG	NW	NE	15	05N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65528			9/22/1999	DEN	UG	NW	SE	15	05N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65529			9/22/1999	DEN	UG	NW	NE	22	05N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65530			9/22/1999	DEN	UG	NW	SE	22	05N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65531			9/22/1999	DEN	UG	NW	NE	23	05N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65532			9/22/1999	DEN	UG	NW	SE	23	05N	54E	5.4	IRD			0	AFA	NY	CSS COMPANY
173B	65533			9/22/1999	DEN	UG	NW	NE	20	06N	54E	5.4	IRD		9/22/1999	0		NY	CSS COMPANY
173B	6554		1098	8/25/1921	ABR	SPR	SE	NE	24	08N	54E	0	STK		8/25/1921	0	AFA	NY	THE LITTLE PARIS SHEEP COMPANY
173B	6554	CHANGED BY:	80994		PER	SPR													
173B	65549			9/22/1999	DEN	UG	NW	SE	33	06N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65550			9/22/1999	DEN	UG	NW	NE	33	06N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65551			9/22/1999	DEN	UG	NW	SE	28	06N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65552			9/22/1999	DEN	UG	NW	NE	28	06N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65553			9/22/1999	DEN	UG	NW	SE	21	06N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65554			9/22/1999	DEN	UG	NW	NE	21	06N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65555			9/22/1999	DEN	UG	NW	SE	20	06N	54E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65557			9/22/1999	DEN	UG	NW	NE	3	04N	53E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	65558			9/22/1999	DEN	UG	NW	SE	3	04N	53E	5.4	IRD		9/22/1999	0	AFA	NY	CSS COMPANY
173B	6669			4/26/1922	CAN	SPR	SW	NE	3	15N	58E	0	MM		4/26/1922	0		WP	READ, WM.M.
173B	66797		17875	8/30/2000	CER	UG	SE	SW	15	15N	58E	0.011	STK		6/11/2009	7.964	AFA	WP	DUCK WATER CATTLE CO.
173B	668			9/9/1907	CAN	STR				04N	55E	0	MM		9/9/1907	0	AFA	NY	AQUILAR, CARLOS
173B	6759		2207	9/8/1922	CER	STR	SE	SE	18	04N	56E	0.853	IRR		9/8/1922	362	AFA	NY	CROSS L. RANCHES LLC
173B	6769		1220	9/22/1922	CER	SPR	NW	SE	29	13N	55E	0.025	STK		9/22/1922	18.1	AFA	NY	U.S.-BUREAU OF INDIAN AFFAIRS
173B	6770		1221	9/22/1922	CER	SPR	NE	NE	31	11N	56E	0.025	STK		9/22/1922	18.107	AFA	NY	FLORIO, A.C.
173B	6779		1911	10/6/1922	CER	SPR	SE	SW	34	16N	57E	0.001	STK		10/6/1922	1.1048	AFA	WP	ROSEVEAR, BESSIE
173B	6799			10/18/1922	WDR	SPR	NE	SW	23	11N	55E	0	STK		10/18/1922	0	AFA	NY	FLORIO, ANGELO C.
173B	68239			11/28/2001	PER	UG	SE	NE	16	12N	56E	0.08	COM		11/28/2001	2	AFA	NY	NYE COUNTY SCHOOL DISTRICT
173B	695			9/23/1907	CAN	STR				04N	55E	0	IRR		9/23/1907	0		NY	WIDEKIND, JOHN H.
173B	69569			2/7/2003	DEN	UG	SW	NE	35	15N	56E	0.38	MM		2/7/2003	0	AFA	WP	MOYLE, LANE
173B	69904	57465		4/22/2003	ABR	UG	NE	NE	33	05N	55E	0	IRR		12/13/1971	0	AFA	NY	GIBSON, R. THOMAS
173B	69904	CHANGED BY:	75661		PER	UG													
173B	701		324	10/3/1907	CER	STR		SE	23	04N	55E	0.48	IRR		10/3/1907	173.23	AFA	NY	CROSS L. RANCHES LLC
173B	70270			7/28/2003	RFA	STR	NW	NE	25	11N	58E	3	IRR		7/28/2003	0	AFA	NY	RWD CURRANT CREEK, LLC UNDIV 72% AND RICHARD W. DIELMAN 28%
173B	70593			11/5/2003	PER	UG	SW	SE	31	11N	58E	0.5	IRR		11/5/2003	140	AFA	NY	DRAYTON, STACY AND CAROLYN
173B	70906			3/1/2004	DEN	SPR	NE	SE	6	11N	58E	0.012	STK		3/1/2004	0	AFA	NY	RWD CURRENT CREEK, LLC
173B	7143		1883	6/25/1924	CER	SPR	SE	SW	33	15N	57E	0.015	STK		6/25/1924	4.4806	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	7144		1884	6/25/1924	CER	SPR	SE	SW	33	15N	57E	0.015	STK		6/25/1924	10.864	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	725			11/12/1907	CAN	STR				04N	55E	0	IRR		11/12/1907	0		NY	WILHELM, GUSTAVE W.
173B	7299			2/6/1925	WDR	STR	SW	NE	28	12N	56E	3.4	IRR		2/6/1925	0		NY	BIRCH, ANNA E.
173B	7303			2/11/1925	CAN	STR	NE	NW	3	11N	56E	0	IRR		2/11/1925	0	AFS	NY	AMONETTE BROS.
173B	75132	57465		11/29/2006	WDR	UG	SE	NE	33	05N	55E	2.4	IRR		12/13/1971	0	AFA	NY	GIBSON, M. DEAN
173B	75259	57465		1/12/2007	WDR	UG	SE	NE	33	05N	55E	2.4	IRR		12/13/1971	0	AFA	NY	GIBSON, R. THOMAS
173B	75505			4/4/2007	RFA	UG	NW	SE	8	10N	58E	10.6	IRR		4/4/2007	4544	AFA	NY	RWD CURRANT CREEK, LLC
173B	75661	69904		5/1/2007	PER	UG	SE	NE	33	05N	55E	3	IRR	Y	12/13/1971	0	AFA	NY	GIBSON, GEORGIA LEE
173B	7577		1236	11/27/1925	CER	SPR	SW	SW	29	15N	55E	0.02	STK		11/27/1925	14.485	AFA	WP	U.S.-BUREAU OF INDIAN AFFAIRS
173B	7603		1351	12/14/1925	CER	SPR	SE	NE	16	07N	55E	0.006	STK		12/14/1925	1.8107	AFA	NY	MURPHEY, MOBILE GLASS; CANYON CREEK
173B	76231			9/6/2007	CAN	UG	SW	SW	32	06N	56E	0.038	STK		9/6/2007	27.78	AFA	NY	NORMAN K. AND SUSAN A. SHARP
173B	76322			9/25/2007	RFA	UG	NE	SE	7	10N	58E	3.5	IRR		9/25/2007	1664	AFA	NY	RWD CURRANT CREEK, LLC
173B	76670			1/28/2008	PER	UG	SE	SW	35	05N	55E	2.7	IRR		1/28/2008	640	AFA	NY	CROSS L. RANCHES, LLC
173B	76757			2/20/2008	DEN	UG	SW	NE	34	15N	56E	0.38	MM		2/20/2008	64.109	AFA	WP	MIKE LEMICH
173B	76825			3/18/2008	PER	UG	NW	NW	27	06N	56E	1.4	IRR		3/18/2008	320	AFA	NY	CROSS L. RANCHES, LLC
173B	76986T	6165		4/22/2008	WDR	UG	NE	SE	7	10N	58E	0.3132	IRR		6/10/1920	150.34	AFA	NY	RWD CURRANT CREEK, LLC
173B	76987T	22050		4/22/2008	WDR	UG	NE	SE	7	10N	58E	1.75	IRR		6/16/1964	480	AFA	NY	RWD CURRANT CREEK, LLC

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173B	76988	64062		4/23/2008	PER	UG	SE	SE	34	06N	56E	2.7	IRR		8/8/1977	640	AFA	NY	CROSS L RANCHES, LLC
173B	77160T	6165		6/18/2008	EXP	UG	NE	SE	7	10N	58E	0.3687	IRR		6/10/1920	176.98	AFA	NY	R.W.D. CURRANT CREEK LLC 72%
173B	77161T	22050		6/18/2008	EXP	UG	NE	SE	7	10N	58E	1.75	IRR		6/16/1964	480	AFA	NY	RICHARD W. DIELEMAN C/O DELCO CRANE SERVICES
173B	7787			6/24/1926	ABR	UG	NW	SE	5	06N	56E	0	IRR		6/24/1926	0		NY	BORDOLI, A.F.
173B	7787	CHANGED BY:	8438		CAN	UG													
173B	7807			7/1/1926	WDR	SPR	SW	SE	36	16N	57E	0	MM		7/1/1926	0		WP	SMITH, FRANK T.A.
173B	78269T	23252		4/16/2009	EXP	UG	SW	NW	34	05N	55E	2.7	IRR		1/21/1963	646	AFA	NY	JENKINS FARMS
173B	78270	23252		4/16/2009	ABR	UG	SW	NW	34	05N	55E	2.7	IRR	Y	1/21/1963	1280	AFA	NY	JENKINS FARMS
173B	78270	CHANGED BY:	81294		PER	UG								Y					
173B	79328			1/28/2010	RFP	UG	NE	SW	4	06N	57E	6	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79329			1/28/2010	RFP	UG	SE	NE	13	06N	56E	6	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79330			1/28/2010	RFP	UG	SE	SW	26	06N	56E	6	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79331			1/28/2010	RFP	UG	NE	SW	3	05N	56E	6	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79332			1/28/2010	RFP	UG	NE	SW	20	05N	56E	6	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79333			1/28/2010	RFP	UG	NE	SW	13	04N	54E	6	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79334			1/28/2010	RFP	UG	SE	SW	35	04N	53E	6	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79335			1/28/2010	RFP	UG	SE	SE	30	07N	55E	6	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79336			1/28/2010	RFP	UG	SW	SW	27	06N	54E	6	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79337			1/28/2010	RFP	UG	SE	NW	8	04N	54E	6	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79338			1/28/2010	RFP	UG	SE	NW	24	07N	57E	10	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79339			1/28/2010	RFP	UG	SE	SW	19	06N	57E	10	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	7934		1386	11/19/1926	CER	SPR	SW	NW	11	08N	58E	0.022	STK		11/19/1926	9.2374	AFA	NY	GUSTAFSON, DEIL O.
173B	79340			1/28/2010	RFP	UG	NW	NE	19	05N	57E	10	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79341			1/28/2010	RFP	UG	NE	SW	6	04N	56E	10	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79342			1/28/2010	RFP	UG	NE	SE	3	04N	55E	10	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79343			1/28/2010	RFP	UG	SE	SE	13	03N	54E	10	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79344			1/28/2010	RFP	UG	SE	NE	3	07N	57E	6	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79345			1/28/2010	RFP	UG	SE	NW	15	07N	57E	6	MUN		1/28/2010	0	AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	7935		1387	11/19/1926	CER	SPR	NW	SE	30	08N	59E	0.022	STK		11/19/1926	9.2374	AFA	NY	GUSTAFSON, DEIL O.
173B	7936		1388	11/19/1926	CER	UG	NW	SE	5	09N	59E	0.022	STK		11/19/1926	9.0226	AFA	NY	GUSTAFSON, DEIL O.
173B	7937		1389	11/19/1926	CER	SPR	SW	NE	13	07N	58E	0.021	STK		11/19/1926	9.2067	AFA	NY	GUSTAFSON, DEIL O.
173B	7938		1390	11/19/1926	CER	SPR	NE	SW	23	08N	58E	0.022	STK		11/19/1926	9.2374	AFA	NY	GUSTAFSON, DEIL O.
173B	7941		2043	11/27/1926	CER	SPR	SW	NW	36	16N	57E	0.009	STK		11/27/1926	6.2606	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	7942		2044	11/27/1926	CER	SPR	NW	NW	4	15N	58E	0.009	STK		11/27/1926	6.2606	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	7944			11/27/1926	WDR	SPR	SE	SE	20	16N	58E	0.025	STK		11/27/1926	0		WP	HALSTEAD, ED
173B	7957		2222	12/24/1926	CER	SPR	NW	NW	23	14N	57E	0.019	STK		12/24/1926	13.871	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	79603			2/18/2010	RFP	UG	NE	SE	7	10N	58E	3.5	IRR		2/18/2010	1664	AFA	NY	RWD CURRANT CREEK LLC
173B	79604			2/18/2010	RFP	UG	NW	SE	8	10N	58E	10.6	IRR		2/18/2010	2560	AFA	NY	RWD CURRANT CREEK LLC
173B	7978			1/12/1927	WDR	SPR	NE	SW	1	14N	58E	0.025	STK		1/12/1927	0		WP	HALSTEAD, ED
173B	8028			3/11/1927	CAN	SPR	SE	NW	19	13N	58E	0.001	STK		3/11/1927	0.7058	AFA	WP	VANOVER, F.C.
173B	8029			3/11/1927	CAN	SPR	SW	NE	12	12N	57E	0.001	STK		3/11/1927	0.7058	AFA	NY	VANOVER, F.C.
173B	8032			3/13/1927	WDR	SPR	NW	NE	14	09N	56E	0	STK		3/13/1927	0	AFA	NY	SHARP, GEORGE H.
173B	8033			3/13/1927	WDR	SPR	NE	SE	8	09N	57E	0	STK		3/13/1927	0	AFA	NY	SHARP, GEORGE H.
173B	8044			3/22/1927	CAN	SPR	NE	SW	28	08N	58E	0	STK		3/22/1927	0	AFS	NY	CAZIER BROS.
173B	8045			3/22/1927	CAN	SPR	SE	SE	27	07N	58E	0	STK		3/22/1927	0	AFS	NY	CAZIER BROTHERS
173B	8046			3/22/1927	WDR	SPR	NE	SW	15	11N	58E	0.5	IRR		3/22/1927			NY	MARTELLETTI BROS.
173B	8047		2061	3/22/1927	CER	SPR	NE	NE	30	11N	58E	0.036	IRR		3/22/1927	27	AFA	NY	DAVID WEAVER
173B	8048			3/22/1927	WDR	SPR	SW	SE	17	15N	58E	0	STK		3/22/1927	0	AFS	WP	HALSTEAD, ED
173B	8049			3/25/1927	CAN	UG	SW	NE	11	08N	56E	0	STK		3/25/1927	0		NY	SHARP, GEORGE
173B	8053			3/25/1927	DEN	UG	SE	SE	27	11N	58E	0.025	STK		3/25/1927	3.5599	AFA	NY	MANZONIE, JOHN
173B	8055			3/25/1927	CAN	SPR	SW	SW	12	11N	59E	0.025	STK		3/25/1927	1.4731	AFS	NY	MANZONIE, JOHN
173B	80842			5/9/2011	RFA	UG	SW	NE	35	15N	56E	1	MM		5/9/2011	0	AFA	WP	MIDWAY GOLD US INC
173B	80994	6554		7/22/2011	PER	SPR	SE	NE	24	08N	54E	0.025	STK		8/25/1921	10.61	AFA	NY	THE LITTLE PARIS SHEEP COMPANY
173B	80994	CHANGED BY:	82816		RFA	SPR													
173B	81294	78270		11/4/2011	PER	UG	NW	NW	34	05N	55E	2.7	IRR	Y	1/21/1963	1280	AFA	NY	JENKINS FARMS LLC
173B	81692	22050		3/22/2012	RFA	UG	NW	SE	8	10N	58E	1.165	IRR		6/16/1964	320	AFA	NY	DIELEMAN, RICHARD W
173B	81693	6165		3/22/2012	RFA	UG	NE	SE	7	10N	58E	0.1787	IRR		6/10/1920	85.776	AFA	NY	DIELEMAN, RICHARD W 28%
173B	8204		2169	6/29/1927	CER	STR	SW	SE	36	16N	57E	0.043	MM		6/29/1927	0	AFA	WP	MORITTI, M.

Nevada Division of Water Rights Database, Hydrographic Abstract Advanced Search, Basin 173B Railroad Valley/Northern Part

Basin	App	Change App.	Cert	File Date	Status[1]	Source[2]	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units[3]	County	Owner of Record
173B	82040	58492		8/6/2012	RFA	SPR	NW	SE	30	11N	58E	0.05	IRR		1/21/1993	0	AFA	NY	WEAVER, DAVID
173B	822			2/15/1908	CAN	SPR				05N	57E	0	IRR		2/15/1908	0		NY	BROUGH, JOHN H.
173B	82685			4/1/2013	RFA	UG	NE	SE	31	11N	58E	1.228	IRR		4/1/2013	0	AFA	NY	WEAVER, DAVID
173B	82691			4/4/2013	RFA	UG	SW	NE	35	15N	56E	1.6	MM		4/4/2013	0	AFA	WP	MIDWAY GOLD US INC
173B	83035T	32318		8/21/2013	PER	UG	NE	SE	31	11N	58E	0.89	IRR		6/27/1977	0	AFA	NY	WEAVER, DAVID
173B	8312			9/1/1927	CAN	SPR	SW	SW	25	16N	57E	0	MM		9/1/1927	0		WP	ANDERSON, JOHN
173B	8422		1792	1/5/1928	CER	SPR	SE	SE	12	07N	58E	0.003	STK		1/5/1928	2.7927	AFA	NY	SHARP, GEO. H.
173B	8423		1793	1/5/1928	CER	UG	SW	NE	11	08N	56E	0.004	STK		1/5/1928	2.7927	AFA	NY	SHARP, GEO. H.
173B	8438	7787		1/25/1928	CAN	UG	NW	SE	5	06N	56E	0	STK		6/24/1926	0	AFA	NY	BORDOLI, A.F.
173B	8659		1908	8/13/1928	CER	SPR	SW	NE	20	16N	58E	0.004	MM		8/13/1928	2.6393	AFA	WP	MCLEISH, MALCOLM
173B	8705			9/27/1928	CAN	SPR	NW	SW	9	04N	56E	0	QM		9/27/1928	0		NY	GARRETT, EMERY
173B	8711			10/5/1928	DEN	SPR	NE	SE	25	03N	54E	0.25	STK		10/5/1928	9.176	AFA	NY	BORDOLI, A.F.
173B	8778		2243	12/15/1928	CER	STR	SW	SE	14	04N	55E	0.016	STK		12/15/1928	11.57	AFA	NY	CROSS L. RANCHES, LLC
173B	8779			12/15/1928	CAN	SPR	SE	SW	19	03N	55E	0	STK		12/15/1928	0	AFA	NY	BORDOLI BROS.
173B	8780			12/15/1928	CAN	STR	NW	SW	19	03N	55E	0.016	STK		12/15/1928	0		NY	BORDOLI BROS.
173B	8928			6/3/1929	DEN	SPR	NW	SE	16	07N	55E	0	IRR		6/3/1929	0	AFS	NY	TITUS, HARVEY L.
173B	8997			7/21/1929	WDR	SPR	NW	NW	18	10N	55E	0	STK		7/21/1929	0	AFA	NY	VANCOVER, F.C.
173B	9039		1927	8/28/1929	CER	UG	NW	SW	7	09N	58E	0.006	STK		8/28/1929	2.5779	AFA	NY	SHARP, GEORGE H.
173B	9085		2208	10/11/1929	CER	SPR	NW	SW	8	04N	56E	0.003	STK		10/11/1929	2.2403	AFA	NY	CROSS L. RANCHES, LLC
173B	9175			11/27/1929	CAN	UG	NE	NW	16	10N	57E	0	STK		11/27/1929	0		NY	TIDBALL, GUY
173B	923			4/18/1908	CAN	SPR				05N	57E	8	MM		4/18/1908			NY	IRVIN, PAUL
173B	924			4/20/1908	CAN	SPR				05N	57E	10	MM		4/20/1908			NY	MANN, O.E.
173B	928		273	4/23/1908	CER	STR	SW	SW	5	11N	59E	0	IRR		4/23/1908	79.28	AFA	NY	RWD CURRANT CREEK, LLC UNDIV 72% AND RICHARD W. DIELMAN 28%
173B	9397		1990	1/8/1931	CER	SPR	NW	NW	6	12N	58E	0.01	STK		1/8/1931	8.685	AFA	NY	FLORIO, A.C.
173B	9399		1989	1/8/1931	CER	SPR	NE	SE	6	12N	56E	0.622	IRR		1/8/1931	449	AFA	NY	USA, BUREAU OF INDIAN AFFAIRS, IN TRUST FOR THE SHOSHONE INDIANS OF DUCKWATER VALLEY
173B	9408		1991	1/30/1931	CER	SPR	NW	SE	15	11N	55E	0.002	STK		1/30/1931	67.209	AFA	NY	U.S.-BUREAU OF INDIAN AFFAIRS
173B	9420		1992	3/4/1931	CER	SPR	NW	NW	1	14N	54E	0.004	STK		3/4/1931	3.253	AFA	NY	U.S.-BUREAU OF INDIAN AFFAIRS
173B	9426		1998	3/4/1931	CER	SPR	SE	SE	6	13N	55E	0.008	STK		3/4/1931	6.4416	AFA	NY	U.S.-BUREAU OF INDIAN AFFAIRS
173B	9465		2533	6/2/1931	CER	STR	SE	SW	5	05N	57E	0.062	STK		6/2/1931	44.806	AFA	NY	CROSS L. RANCHES, LLC
173B	9504		2003	7/25/1931	CER	SPR	SW	NW	23	11N	55E	0.002	STK		7/25/1931	1.5958	AFA	NY	BUREAU OF INDIAN AFFAIRS FOR SHOSHONE INDIANS OF DUCKWATER, NV
173B	9524		2244	9/4/1931	CER	OSW	NW	SW	34	05N	54E	0.02	STK		9/4/1931	14.485	AFA	NY	CROSS L. RANCHES, LLC
173B	9586			4/9/1932	ABR	STR	SE	SW	27	06N	57E	0	MM		4/9/1932	0		NY	OLD ENGLISH GOLD CORP.
173B	9586	CHANGED BY:	10200		CER	STR													
173B	9589			4/18/1932	WDR	SPR	SE	SE	28	10N	54E	0.5	STK		4/18/1932			NY	MENDES, W.F.
173B	R05231			1/28/1991	RES	SPR	NE	NW	5	06N	57E	0.006	OTH		4/17/1926	4.4806	AFA	NY	BLM
173B	R05233			1/28/1991	RES	SPR	NW	NW	33	07N	57E	0.006	OTH		4/17/1926	4.4806	AFA	NY	BLM
173B	R05234			1/28/1991	RES	SPR	SW	SW	28	07N	57E	0.006	OTH		4/17/1926	4.4806	AFA	NY	BLM
173B	R05235			1/28/1991	RES	SPR	NW	SW	28	07N	57E	0.006	OTH		4/17/1926	4.4806	AFA	NY	BLM
173B	R05236			1/28/1991	RES	SPR	SE	NE	14	06N	56E	0.006	OTH		4/17/1926	0	AFA	NY	BLM
173B	R05237			1/28/1991	RES	SPR	SW	NW	28	07N	57E	0.006	OTH		4/17/1926	0	AFA	NY	BLM
173B	R05244			2/25/1991	RES	SPR	NW	NW	33	07N	57E	0.006	OTH		4/17/1926	0	AFA	NY	BLM
173B	R05876			2/17/1993	RES	SPR	SW	SE	11	06N	54E	0.011	OTH		4/17/1926	7.9178	AFA	NY	BLM
173B	R05878			2/17/1993	RES	SPR	SE	NW	23	06N	54E	0.011	OTH		4/17/1926	7.9178	AFA	NY	BLM
173B	R05879			2/17/1993	RES	SPR	NW	SE	16	07N	55E	0.006	OTH		4/17/1926	5.3706	AFA	NY	BLM
173B	R05880			2/17/1993	RES	SPR	NW	NE	11	06N	54E	0.011	OTH		4/17/1926	7.9178	AFA	NY	BLM
173B	R05881			2/17/1993	RES	SPR	NE	SW	16	07N	55E	0.006	OTH		4/17/1926	4.5727	AFA	NY	BLM
173B	R05883			2/17/1993	RES	SPR	SE	NE	15	08N	55E	0.006	OTH		4/17/1926	4.5727	AFA	NY	BLM
173B	R05885			2/17/1993	RES	SPR	NW	SE	16	07N	55E	0.006	OTH		4/17/1926	4.5727	AFA	NY	BLM
173B	R06074			11/3/1993	RES	SPR	NW	NW	21	04N	52E	0.01	STK		4/17/1926	2.19	AFA	NY	BLM
173B	R06075			11/3/1993	RES	SPR	NE	SE	20	04N	52E	0.01	STK		4/17/1926	2.19	AFA	NY	BLM
173B	R06076			11/3/1993	RES	SPR	NW	SW	6	04N	53E	0.01	STK		4/17/1926	2.19	AFA	NY	BLM
173B	R06077			11/3/1993	RES	SPR	NE	SW	12	01N	54E	0.01	STK		4/17/1926	2.19	AFA	NY	BLM
173B	V00736			8/5/1909	VST	SPR	SE	SW	31	05N	57E	0	IRR		12/31/1897	0	AFA	NY	SHARP, NORMAN K.
173B	V01270			12/10/1913	VST	SPR	SE	SW	33	15N	57E	0	IRR		12/31/1872	0	AFA	WP	HALSTEAD FORSGREN RANCHES
173B	V01325			7/8/1914	VST	SPR			31	11N	58E	0	IRR		01/01/1895	137.76	AFA	NY	DAVID WEAVER

Basin	App	Change App.	Cert	File Date	Status[1]	Source[2]	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units[3]	County	Owner of Record
173B	V01339			10/20/1914	VST	SPR		NW	20	12N	56E	0	IRR		09/01/1869	0	AFA	NY	BUREAU OF INDIAN AFFAIRS-DUCKWATER SHOSHONE
173B	V01340			10/20/1914	VST	STR	SE	NW	35	11N	58E	0	IRR		12/31/1874	0	AFA	NY	JOHNSON, JAMES L.
173B	V01478			12/1/1916	VST	SPR	NE	SE	30	11N	56E	0.025	STK		12/31/1899	0	AFA	NY	TOGNONI, J.C.
173B	V01481			12/1/1916	VST	SPR	SW	SE	20	13N	55E	0.037	STK		12/31/1889	0		NY	TOGNONI, J.C.
173B	V01483			12/1/1916	VST	SPR	SE	SE	6	13N	55E	0.025	STK		12/31/1888	0		NY	TOGNONI, J.C.
173B	V01485			12/1/1916	VST	SPR	NW	NW	1	14N	54E	0.025	STK		12/31/1879	0	AFA	NY	FLORIO, A.C.
173B	V01638			7/1/1919	DEC	SPR	SW	SE	4	10N	58E	4	DEC			0	AFA	NY	RWD CURRANT CREEK, LLC 72% AND JAT CURRANT CREEK, LLC
173B	V01640			10/17/1919	DEC	SPR	SE	SE	26	11N	58E	1.063	DEC			0	AFA	NY	DECATUR 215, LLC
173B	V01641			10/17/1919	DEC	SPR	SE	NW	35	11N	58E	0.833	DEC			0	AFA	NY	RWD CURRANT CREEK, LLC AND RICHARD W. DIELMAN
173B	V01642			10/17/1919	DEC	SPR		LT01	3	10N	58E	2	DEC			0	AFA	NY	RWD CURRANT CREEK, LLC AND RICHARD W. DIELMAN
173B	V01647			11/1/1919	DEC	SPR	NW	SW	19	11N	59E	2	DEC			0	AFA	NY	RWD CURRANT CREEK, LLC AND RICHARD W. DIELMAN
173B	V01760			3/21/1921	VST	STR	NE	SW	21	12N	56E	7	IRR		01/01/1874	0	AFA	NY	HALSTEAD FORSGREN RANCHES
173B	V01763			4/14/1921	VST	STR	NE	NW	17	12N	56E	4.2	IRR		03/01/1868	0	AFA	NY	BUREAU OF INDIAN AFFAIRS-DUCKWATER SHOSHONE
173B	V01853			9/22/1924	VST	STR	SW	NE	28	12N	56E	0	IRR		01/01/1868	0	AFA	NY	HALSTEAD FORSGREN RANCHES
173B	V02152			12/8/1927	VST	SPR	NE	SE	25	03N	54E	0.25	STK		12/31/1899	0	AFA	NY	REGIONAL AGRICULTURAL CREDIT CORP.
173B	V02203			12/15/1928	VST	SPR	SE	SE	4	05N	56E	0.025	STK		1/1/1900	8.9612	AFA	NY	SHARP, GERALD HOWARD
173B	V02208			9/16/1929	VST	SPR	NW	NW	36	12N	57E	0.05	STK		12/31/1890	8.9612	AFA	NY	BRADSHAW, KARL
173B	V02209			9/16/1929	VST	SPR	NW	NW	16	10N	55E	0.05	STK		01/01/1880	8.9612	AFA	NY	BRADSHAW, KARL
173B	V02247			9/4/1931	VST	SPR	NE	SW	23	06N	54E	0.1	STK		01/01/1898	0	AFA	NY	BORDOLI BROS.
173B	V02248			9/4/1931	VST	STR	NE	SW	5	05N	57E	1	STK		01/01/1898	0	AFA	NY	SHARP, GERALD HOWARD
173B	V02249			9/4/1931	VST	SPR	SW	NE	11	06N	54E	0.025	STK		01/01/1898	0	AFA	NY	BORDOLI BROS.
173B	V02340			2/10/1947	VST	STR			12	06N	56E	0.25	STK		12/31/1879	0	AFA	NY	SHARP, GERALD HOWARD
173B	V02341			2/10/1947	VST	STR			23	04N	55E	0.25	STK		01/01/1880	0	AFA	NY	SHARP, GERALD HOWARD
173B	V02353			9/20/1948	VST	SPR	SE	SE	11	08N	57E	3.22	IRR		1/1/1900	0	AFA	NY	CROSS L. RANCHES, LLC
173B	V02426			6/12/1957	VST	UG	NW	SE	5	09N	59E	0.02	STK		1/1/1917	10.71	AFS	NY	GARRETT, CLARA MAUDE
173B	V02444			10/23/1959	VST	SPR	NW	NE	25	13N	57E	0.016	STK			0	AFA	NY	BRADSHAW, BARRY KARL AND NORMA J.
173B	V02445			10/23/1959	VST	SPR	NW	NW	6	12N	58E	0.111	STK			0	AFA	NY	BRADSHAW, BARRY KARL AND NORMA J.
173B	V02446			10/23/1959	VST	SPR	NW	NW	19	10N	55E	0.022	STK			0	AFA	NY	BRADSHAW, BARRY KARL & NORMA J.
173B	V02447			10/23/1959	VST	SPR	SW	SW	31	10N	56E	0.011	STK			0	AFA	NY	BRADSHAW, BARRY KARL & NORMA J.
173B	V02448			10/23/1959	VST	SPR	NW	SE	7	10N	55E	0.011	STK		01/01/1868	0	AFA	NY	BRADSHAW, KARL
173B	V02533			6/19/1964	VST	SPR	SW	NE	15	08N	55E	4.5	IRR		01/01/1885	3257.9	AFA	NY	MURPHEY; MOBILE GLASS; CANYON CREEK
173B	V02534			6/19/1964	VST	SPR	NE	NE	15	08N	55E	3.5	IRR		01/01/1885	2533.9	AFA	NY	NEVADA STATE LANDS
173B	V02535			6/19/1964	VST	SPR	SE	NE	15	08N	55E	1.3	IRR		01/01/1885	941.16	AFA	NY	NEVADA STATE LANDS
173B	V02536			6/19/1964	VST	SPR	SW	NW	14	08N	55E	2	IRR		01/01/1885	1447.9	AFA	NY	NEVADA STATE LANDS
173B	V02537			6/19/1964	VST	SPR	SE	NE	15	08N	55E	3	IRR		01/01/1885	2171.9	AFA	NY	NEVADA STATE LANDS
173B	V02878			6/23/1976	VST	SPR	SE	SE	11	08N	57E	0.465	IRR		01/01/1896	0	AFA	NY	CROSS L. RANCHES LLC
173B	V02879			6/23/1976	VST	SPR	SE	SE	11	08N	57E	0.272	IRR		1/1/1904	0		NY	HANKS, CARL J
173B	V02880			6/23/1976	VST	SPR	NE	SE	27	08N	57E	0.506	IRR		01/01/1895	0		NY	HANKS, CARL J
173B	V03183			7/26/1979	VST	SPR	NE	SW	16	07N	55E	0.016	STK		01/01/1873	0		NY	BLM
173B	V03184			7/26/1979	VST	SPR	NW	SE	16	07N	55E	0.016	STK		01/01/1873	0		NY	BLM
173B	V03185			7/26/1979	WDR	SPR	NW	SE	16	07N	55E	0.016	STK		01/01/1873	0		NY	BLM
173B	V03952			5/21/1982	VST	OSW	NE	NE	32	16N	58E	0.015	STK		05/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03953			5/21/1982	VST	OSW	NE	SE	29	16N	58E	0.015	STK		01/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03954			5/21/1982	VST	OSW	SE	NE	32	16N	58E	0.015	STK		01/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03955			5/21/1982	VST	OSW	SE	SW	33	16N	58E	0.015	STK		05/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03956			5/21/1982	VST	OSW	SW	SE	9	15N	58E	0.015	STK		01/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03957			5/21/1982	VST	OSW	NW	SE	4	15N	58E	0.015	STK		01/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03958			5/21/1982	VST	SPR	NE	NE	20	16N	58E	0.015	STK		05/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03959			5/21/1982	VST	SPR	NW	SE	20	16N	58E	0.015	STK		05/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03960			5/21/1982	VST	SPR	NW	NE	20	16N	58E	0.015	STK		01/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03961			5/21/1982	VST	SPR	SW	NE	32	16N	58E	0.015	STK		01/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03962			5/21/1982	VST	SPR	NE	SE	32	16N	58E	0.015	STK		01/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03963			5/21/1982	VST	SPR	NW	SW	28	16N	58E	0.015	STK		01/01/1873	0	AFA	WP	U.S.-FOREST SERVICE

Nevada Division of Water Rights Database, Hydrographic Abstract Advanced Search, Basin 173B Railroad Valley/Northern Part

Basin	App	Change App.	Cert	File Date	Status[1]	Source[2]	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units[3]	County	Owner of Record
173B	V04668			5/27/1988	VST	SPR	NW	SE	20	04N	52E	0.032	STK		01/01/1870	0	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983 TRUST
173B	V04669			5/27/1988	VST	SPR	NW	NW	21	04N	52E	0.032	STK		01/01/1870	0	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983 TRUST
173B	V04670			5/27/1988	VST	SPR	NE	SW	12	04N	52E	0.032	STK		01/01/1870	0	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983 TRUST
173B	V04671			5/27/1988	VST	SPR	NW	SW	6	04N	53E	0.032	STK		01/01/1870	0	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983 TRUST
173B	V09111			7/23/1999	VST	SPR	SE	SE	11	08N	57E	3.013	IRR		1/1/1900	1184	AFA	NY	CROSS L. RANCHES LLC
173B	V09394			5/15/2003	VST	SPR	NE	NE	9	12N	55E	0.0155	STK		1/1/1900	0	AFA	NY	HALSTEAD-FORSGREN RANCHES, INC.
173B	V09856			11/4/2009	VST	STR	SW	NW	25	14N	56E	0.0124	STK		1/1/1900	0	AFA	WP	BLUE DIAMOND OIL CORPORATION

Source: NDWR-Water Rights Database Advanced Search (Special Hydrographic Abstract) (Nevada Division of Water Resources 2014g)

Notes:

1 - Status: ABR=abrogated; CAN=cancelled; CER=certified; DEC=decreed; DEN=denied; EXP=expired; FOR=forfeited; PER=permit; RES=reserved; RFA=ready for action; RFP=ready for action (protested); VST=vested right; WDR=withdrawn

2 - Source: OSW=other surface water; RES=reservoir; SPR=spring; STR=stream; UG=underground/well

3 - Units: AFA=acre-feet annually; AFS=acre-feet seasonally

POD - point of diversion

Appendix 3B

List of Scientific Names for Plant Species Described in the Draft Environmental Impact Statement for the Gold Rock Mine Project

Appendix 3B. List of Scientific Names for Plant Species Noted in the Draft Environmental Impact Statement for the Gold Rock Mine Project

Common Name	Scientific Name	Status
alkali sacaton	*Sporobolus airoides*	--
alkali sagebrush	*Artemisia arbuscula* ssp. *longiloba*	--
antelope bitterbrush	*Purshia tridentata*	--
beehive cactus	*Coryphantha vivipara*	--
(basin) big sagebrush	*Artemisia tridentata* ssp. *tridentata*	--
(Wyoming) big sagebrush	*Artemisia tridentata* ssp. *wyomingensis*	--
black sagebrush	*Artemisia nova*	--
Blaine pincushion	*Sclerocactus blainei*	SC, S
blue (purple) mustard	*Chorispora tenella*	W
bluebunch wheatgrass	*Pseudoroegneria spicata*	--
bud sage	*Artemisia spinescens*	--
bur buttercup	*Ranunculus testiculatus*	--
Chamber's twinpod	*Physaria chambersii*	--
cheatgrass	*Bromus tectorum*	W
claret-cup cactus	*Echinocereus triglochidiatus* var. *mojavensis*	--
clasping pepperweed	*Lepidium perfoliatum*	W
desert green gentian	*Frasera albomarginata*	--
downy rabbitbrush	*Chrysothamnus viscidiflorus* ssp. *puberulus*	
Drummond's false pennyroyal	*Hedeoma drummondii*	--
dwarf goldenbush	*Ericameria nana*	--
dwarf peppercress	*Lepidium nanum*	--
Eastwood milkweed, Eastwood's milkvetch	*Asclepias eastwoodiana*	SC, S
elongated mustard	*Brassica elongata*	W
four-wing saltbush	*Atriplex canescens*	--
greasewood	*Sarcobatus vermiculatus*	--
Great Basin wild-rye	*Leymus (Elymus) cinereus*	--
gumweed aster	*Xanthisma (Machaeranthera) grindelioides* var. *depressum*	--
halogeton	*Halogeton glomeratus*	W
heartleaf twistflower	*Streptanthus cordatus*	--
herb sophia	*Descurainia sophia*	--
horsebrush	*Tetradymia spp.*	--
Indian ricegrass	*Achnatherum hymenoides*	--
Jaeger's beardtongue	*Penstemon thompsoniae* ssp.*jaegeri*	S
Joshua tree	*Yucca brevifolia*	--
Kentucky bluegrass	*Poa pratensis*	--
littleleaf mountain mahogany	*Cercocarpus intricatus*	--
low feverfew	*Parthenium ligulatum*	S
Masonic rockcress, sagebrush rockcress	*Boechera (Arabis) cobrensis*	--
mormon tea	*Ephedra viridis*	--
Needle Mountains milkvetch	*Astragalus eurylobus*	S
needle-and-thread	*Hesperostipa comata*	--
Nevada jointfir	*Ephedra nevadensis*	--
Sandberg bluegrass	*Poa secunda*	--
parish phacelia	*Phacelia parishii*	SC, S
plains prickly-pear	*Opuntia polyacantha*	--

Common Name	Scientific Name	Status
rayless tansy aster	*Machaeranthera grindelioides* var. *depressa*	--
rock spiraea	*Petrophytum caespitosum*	--
rubber rabbitbrush	*Ericameria nauseosa* ssp. *hololeuca*	--
Russian knapweed	*Acroptilon repens*	W
sand (club-) cholla	*Grusonia (Opuntia) pulchella*	S
shadscale	*Atriplex confertifolia*	--
Shockley's rockcress	*Boechera shockleyi, Arabis shockleyi*	--
Simpson's buckwheat	*Eriogonum. microthecum* var. *simpsonii*	--
Simpson's plains-cactus	*Pediocactus simpsonii*	--
singleleaf pinyon	*Pinus monophylla*	--
broom snakeweed	*Gutierrezia sarothrae*	--
spiny hopsage	*Grayia spinosa*	--
squirreltail	*Elymus elymoides*	--
stalked whitlow-grass	*Draba pedicellata* var. *pedicellata*	--
Stansbury's cliffrose	*Purshia stansburiana*	--
starveling milkvetch	*Astragalus jejunus* var. *jejunus*	--
stemless mock goldenweed	*Stenotis acaulis*	--
Steptoe Valley beardtongue	*Penstemon immanifestus*	--
sulphur-flower buckwheat	*Eriogonum umbellatum* var. *dichrocephalum*	--
tamarisk (salt cedar)	*Tamarix ramosissima*	W
thickstem wild cabbage	*Caulanthus crassicaulis*	--
Torrey's milkvetch	*Astragalus calycosus* var.*monophyllidius*	S
tumble mustard	*Sisymbrium altissimum*	W
Utah juniper	*Juniperus osteosperma*	--
Welsh's cryptantha	*Cryptantha welshii*	--
western wheatgrass	*Pascopyrum smithii*	--
whitetop/hoary cress	*Cardaria draba, Cardaria chalepensis, Lepidium draba, and Lepidium draba* ssp. *chalepensis*	W
winterfat	*Krascheninnikovia lanata*	--
yellow rabbitbrush	*Chrysothamnus viscidiflorus (mostly* ssp. *puberulus)*	--

Notes:
BLM – Bureau of Land Management Ely District
USFWS – US Fish and Wildlife Service
C – candidate for listing under Endangered Species Act
SC – listed as species of concern by USFWS
S – BLM sensitive in state of Nevada
W – Noxious Weed/Introduced Invasive

APPENDIX 3C

List of Scientific Names for Wildlife Species Described in the Draft Environmental Impact Statement for the Gold Rock Mine Project

Appendix 3C. List of Scientific Names for Wildlife Species Noted in the Draft Environmental Impact Statement for the Gold Rock Mine Project

Common Name	Scientific Name	Status
Big Game		
elk	*Cervus canadensis*	
mule deer	*Odocoileus hemionus*	
pronghorn antelope	*Antilocapra americana*	
bighorn Sheep	*Ovis canadensis*	BLM Sensitive
Small Mammals		
black-tailed jackrabbit	*Lepus californicus*	
cliff chipmunk	*Eutamias dorsalis*	
deer mouse	*Peromyscus maniculatus*	
desert cottontail	*Sylvilagus audubonii*	
kangaroo rat	*Dipodomys sp.*	
white-tailed antelope ground squirrel	*Ammospermophilus leucurus*	
woodrat	*Neotoma spp.*	
pygmy rabbit	*Brachylagus idahoensis*	BLM Sensitive
dark kangaroo mouse	*Microdipodops megacephalus*	BLM Sensitive, Nevada Protected
pale kangaroo mouse	*Microdipodops pallidus*	BLM Sensitive, Nevada Protected
big brown bat	*Eptesicus fuscus*	BLM Sensitive
Brazilian free-tailed bat	*Tadarida brasiliensis*	BLM Sensitive, Nevada Protected
California myotis	*Myotis californicus*	BLM Sensitive
fringed myotis	*Myotis thysanodes*	BLM Sensitive, Nevada Protected
hoary bat	*Lasiurus cinereus*	BLM Sensitive
little brown myotis	*Myotis lucifugus*	BLM Sensitive
long-eared myotis	*Myotis evotis*	BLM Sensitive
long-legged myotis	*Myotis volans*	BLM Sensitive
pallid bat	*Antrozous pallidus*	BLM Sensitive, Nevada Protected
silver-haired bat	*Lasionycteris noctivagans*	BLM Sensitive
spotted bat	*Euderma maculatum*	BLM Sensitive, Nevada Protected
Townsend's big-eared bat	*Corynorhinus townsendii*	BLM Sensitive, Nevada Protected
western pipistrelle	*Pipistrellus hesperus*	BLM Sensitive
western red bat	*Lasiurus blossevillii*	BLM Sensitive, Nevada Protected
western small-footed myotis	*Myotis ciliolabrum*	BLM Sensitive
Yuma myotis	*Myotis yumanensis*	BLM Sensitive
Predatory Mammals		
badger	*Taxidea taxus*	
bobcat	*Lynx rufus*	
coyote	*Canis latrans*	
gray fox	*Urocyon cinereoargenteus*	
kit fox	*Vulpes macrotis*	
mountain lion	*Puma concolor*	
red fox	*Vulpes vulpes*	
Reptiles		
desert horned lizard	*Phrynosoma platyrhinos*	
Great Basin gopher snake	*Pituophis catenifer deserticola*	
Great Basin rattlesnake	*Crotalus viridis lutosus*	

Common Name	Scientific Name	Status
greater short-horned lizard	*Phrynosoma hernandesi*	
side-blotched lizard	*Uta stransburiana*	
western fence lizard	*Scleroporus occidentalis*	
western rattlesnake	*Crotalus viridis*	
Fish		
Railroad Valley springfish	*Crenichthys nevadae*	Federally Threatened
Upland Game Birds		
mourning dove	*Zenaida macroura*	
chukar	*Alectoris chukar*	
greater sage grouse	*Centrocercus urophasianus*	Federal Candidate, USFWS Bird of Conservation Concern, BLM Sensitive, Nevada Protected
Migratory Birds		
American kestrel	*Falco sparverius*	
American robin	*Turdus migratorius*	
bald eagle	*Haliaeetus leucocephalus*	Bald and Golden Eagle Protection Act, USFWS Bird of Conservation Concern, BLM Sensitive, Nevada Protected
barn owl	*Tyto alba*	
black rosy-finch	*Leucosticte atrata*	USFWS Bird of Conservation Concern, BLM Sensitive
blue-headed vireo	*Vireo solitarius*	
Brewer's sparrow	*Spizella breweri*	USFWS Bird of Conservation Concern, BLM Sensitive, Nevada Protected
brown creeper	*Certhia americana*	
burrowing owl	*Athene cunicularia*	
calliope hummingbird	*Stellula calliope*	USFWS Bird of Conservation Concern
Cassin's finch	*Carpodacus cassinii*	
Cooper's hawk	*Accipiter cooperii*	
dusky flycatcher	*Empidonax oberholseri*	
eared grebe	*Podiceps nigricollis*	USFWS Bird of Conservation Concern
ferruginous hawk	*Buteo regalis*	USFWS Bird of Conservation Concern, BLM Sensitive
flammulated owl	*Otus flammeolus*	
golden eagle	*Aquila chrysaetos*	Bald and Golden Eagle Protection Act, USFWS Bird of Conservation Concern, BLM Sensitive, Nevada Protected
great blue heron	*Ardea herodias*	
great horned owl	*Bubo virginianus*	
green-tailed towhee	*Pipilo chlorurus*	USFWS Bird of Conservation Concern
hairy woodpecker	*Picoides villosus*	
hermit thrush	*Catharus guttatus*	
horned lark	*Eremophila alpestris*	
lesser goldfinch	*Cardeulis psaltria*	
Lewis's woodpecker	*Melanerpes lewis*	USFWS Bird of Conservation Concern
loggerhead shrike	*Lanius ludovicianus*	USFWS Bird of Conservation Concern, BLM Sensitive, Nevada Protected
long-billed curlew	*Numenius americanus*	USFWS Bird of Conservation Concern

Common Name	Scientific Name	Status
long-eared owl	*Asio otus*	
merlin	*Falco columbarius*	
northern goshawk	*Accipiter gentilis*	BLM Sensitive, Nevada Protected
northern harrier	*Circus cyaneus*	
northern saw-whet owl	*Aegolius acadicus*	
osprey	*Pandion haliaetus*	
peregrine falcon	*Falco peregrinus anatum*	USFWS Bird of Conservation Concern, BLM Sensitive, Nevada Protected
pinyon jay	*Gymnorhinus cyanocephalus*	USFWS Bird of Conservation Concern, BLM Sensitive, Nevada Protected
prairie falcon	*Falco mexicanus*	
red crossbill	*Loxia curvirostra*	
red-tailed hawk	*Buteo jamaicensis*	
rough-legged hawk	*Buteo lagopus*	
sage sparrow	*Amphispiza belli*	USFWS Bird of Conservation Concern
sage thrasher	*Oreoscoptes montanus*	USFWS Bird of Conservation Concern, BLM Sensitive, Nevada Protected
sharp-shinned hawk	*Accipiter striatus*	
short-eared owl	*Asio flammeus*	
snowy plover	*Charadrius alexandrinus*	USFWS Bird of Conservation Concern
swainson's hawk	*Buteo swainsoni*	BLM Sensitive
turkey vulture	*Cathartes aura*	
violet-green swallow	*Tachycineta thalassina*	
Virginia's warbler	*Oreothlypis virginiae*	USFWS Bird of Conservation Concern
warbling vireo	*Vireo gilvus*	
western burrowing owl	*Athene cunicularia*	BLM Sensitive
western screech owl	*Megascops kennicottii*	
western tanager	*Piranga ludoviciana*	
white-breasted nuthatch	*Sitta carolinensis*	
yellow warbler	*Dendroica petechia*	
yellow-bellied sapsucker	*Sphyrapicus varius*	
yellow-rumped warbler	*Dendroica coronata*	

Notes:
BLM – Bureau of Land Management Ely District
USFWS – US Fish and Wildlife Service

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Appendix 3D

Visual Contrast Rating
Worksheets

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

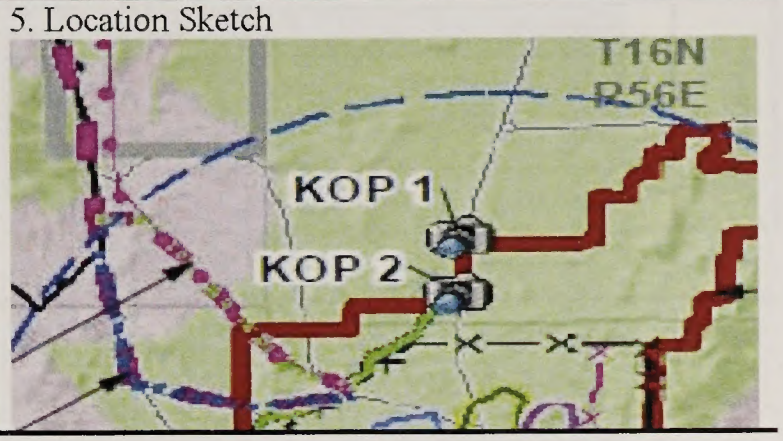
Date: 8/15/2014

District/ Field Office: Ely District/Eagan FO

Resource Area: Ely District, NV

Activity (program): Mining

SECTION A. PROJECT INFORMATION

1. Project Name	4. Location	5. Location Sketch
Midway Gold Rock EIS	Township 16N	
2. Key Observation Point **KOP 1 / GPS NEW South:** Looking south on CR 1177 (Easy Junior Road) at a high point near the Plan area boundary. This location is located approximately 3 miles from the proposed waste rock disposal areas.	Range 56E	
3. VRM Class IV	Section 16	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Foreground: Flat, vertical Mid ground: Low, rounded, gently sloping Background: High, pyramidal and rounded (Easy and Meridian Ridges)	Low, rounded, sparse and dense (scrub brush)	Linear, rectangular (existing unpaved county road)
LINE	Vertical, diagonal and curved	Rugged, irregular	Low and diagonal
COLOR	Tan (patches of bare ground in foreground), dark gray (escarpment in background)	Dark green and sage green (scrub brush and grasses)	Tan (existing unpaved county road)
TEX-TURE	Fine to medium	Medium to coarse	Smooth to medium

SECTION C. PROPOSED ACTIVITY DESCRIPTION

		2. VEGETATION	3. STRUCTURES
FORM	Flat to rounded landforms introduced in the middleground area from the north and south waste rock disposal areas (WRDAs) and the heap leach pile.	Landforms introduced by the proposed project would not be vegetated during operations.	Proposed activity structures would not be visible from this KOP. No change to existing road.
LINE	Near horizontal and irregular lines at the skyline	The proposed landforms would create irregular, thin to wide lines of unvegetated surfaces.	Proposed activity structures would not be visible from this KOP. No change to existing road.
COLOR	The north and south WRDAs would appear dark brown. The proposed heap leach pile would be medium to light brown.	The brown colors of the proposed unvegetated landforms would contrast with the green color of the existing surrounding vegetation cover.	Proposed activity structures would not be visible from this KOP. No change to existing road.
TEX-TURE	Fine to medium	Fine to medium texture of proposed landforms would contrast with the medium to coarse texture of the existing surrounding vegetation cover.	Proposed activity structures would not be visible from this KOP. No change to existing road.

Form 8400-4 Visual Contrast Rating Worksheet

KOP 1 / GPS NEW South: Looking south on CR 1177 (Easy Junior Road) at a high point near the Plan area boundary. This location is located approximately 3 miles from the proposed waste rock disposal areas.

Section A. Project Information, Section B. Characteristic Landscape Description, Section C. Proposed Activity Description

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM		X				X						X
	LINE		X				X						X
	COLOR	X					X						X
	TEXTURE	X					X						X

2. Does project design meet visua resource management objectives?
X Yes ___No
(Explain on reverses side)

3. Additional mitigating measures recommended
___Yes X No (Explain or reverses side)

Evaluator's Names
Date: 8/2014
Kathryn Cloutier, ARCADIS

SECTION D. (Continued)

Comments from item 2.

The portions of the proposed north and south WRDAs and heap leach pile that would be visible from KOP 1 (looking south) are located in an area designated as VRM Class IV. The proposed facilities would introduce flat to rounded, horizontal landforms at the skyline in the middleground area approximately 3 miles from the KOP. The proposed landforms would not be vegetated during operations; therefore, the brown colors and fine to medium texture of the unvegetated landforms would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover. The proposed activity would result in a moderate to strong degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area. This viewpoint would be observed by travelers on CR 1177. The proposed WRDAs and heap leach pile would conform to the management objectives of VRM Class IV.

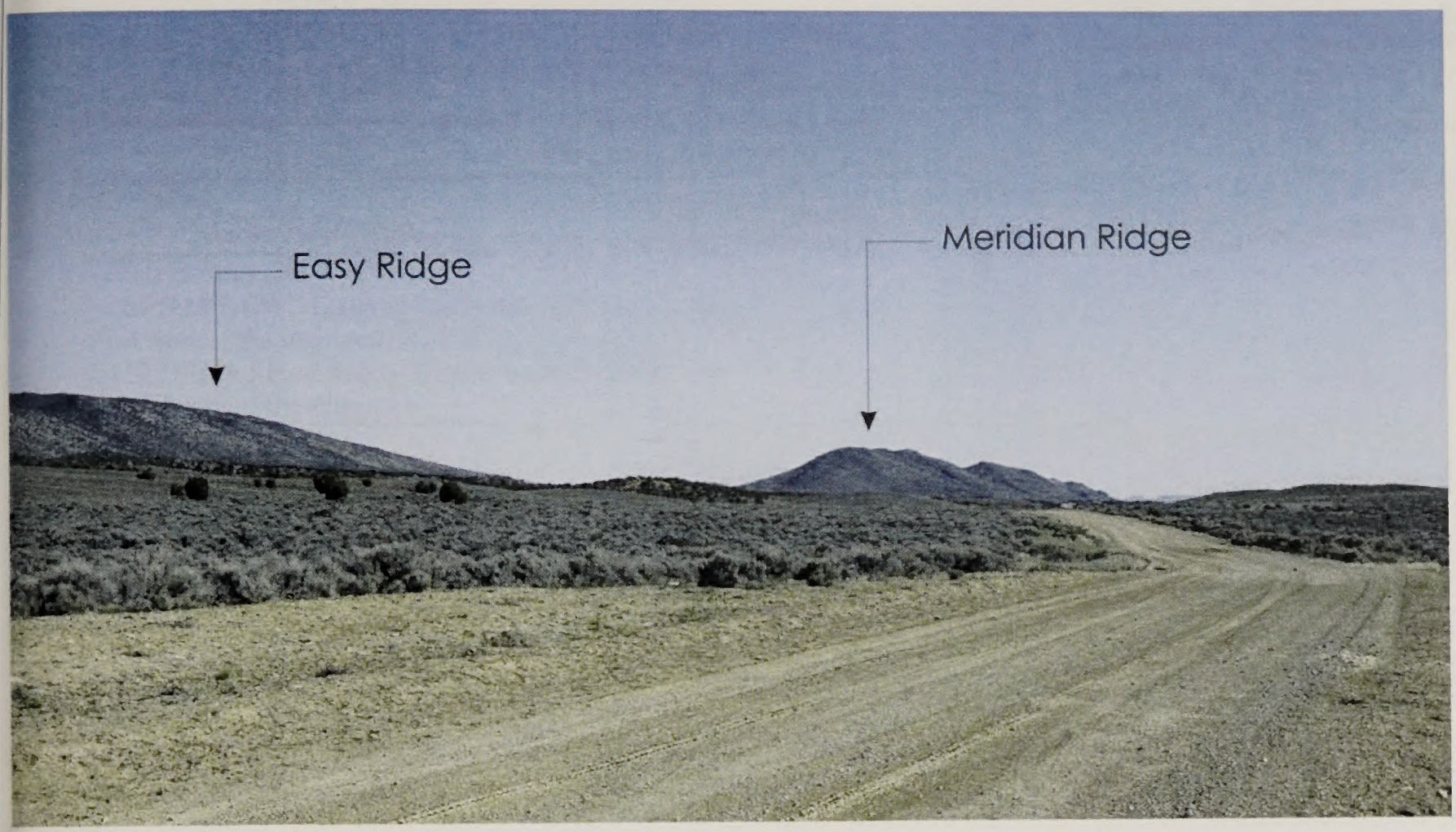
Form 8400-4 Visual Contrast Rating Worksheet

KOP 1 / GPS NEW South

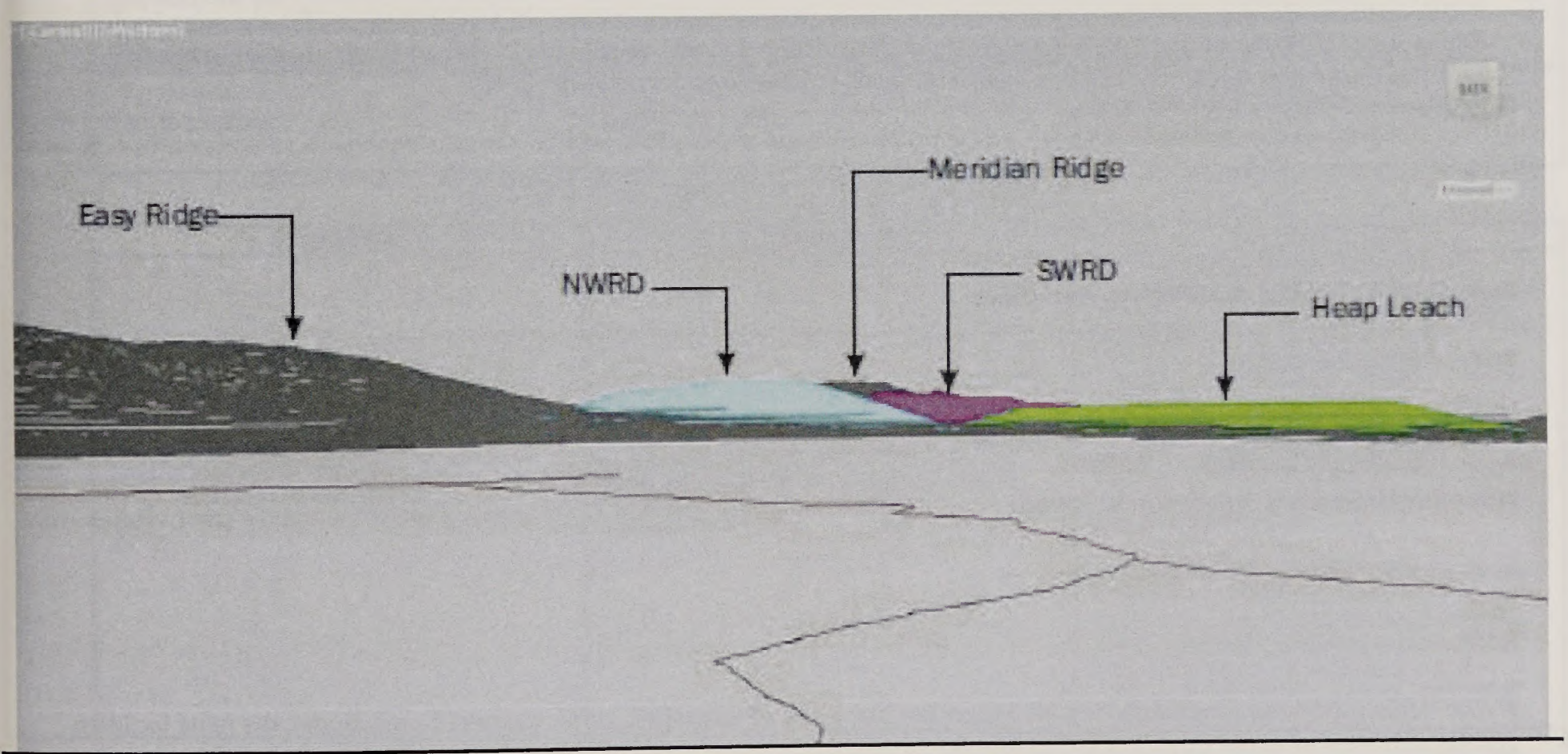
Section D. Contrast Rating – __ Short Term x Long-Term

The portions of the proposed north and south WRDAs and heap leach pile that would be visible from KOP 1 (looking south) are located in an area designated as VRM Class IV. The proposed facilities would introduce flat to rounded, horizontal landforms at the skyline in the middleground area approximately 3 miles from the KOP. The proposed landforms would not be vegetated during operations; therefore, the brown colors and fine to medium texture of the unvegetated landforms would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover. The proposed activity would result in a moderate to strong degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area. This viewpoint would be observed by travelers on CR 1177. The proposed WRDAs and heap leach pile would conform to the management objectives of VRM Class IV.

Existing Conditions GPS NEW looking south



Wire frame model of GPS NEW looking south [1]



Form 8400-4 Visual Contrast Rating Worksheet

KOP 1 / GPS NEW South

Photograph of existing conditions, noting Easy Ridge and Meridian Ridge

Wire frame model of GPS NEW looking south, showing Easy Ridge, the proposed NWRD, Meridian Ridge, the proposed SWRD and the proposed heap leach

Additional Mitigating Measures (See item 3)

No mitigating measures are recommended.

Notes:

1 A wire frame model is a computer-generated representation of a photographic view. In a wire frame model, the mine facilities are distinguished from the surrounding topography by differentiation in color, usually in extreme contrasts, in order to clearly delineate the proposed action from the existing topography (ViewPoint Services Inc. 2012).

Form 8400-4 Visual Contrast Rating Worksheet

KOP 1 / GPS NEW South

Additional mitigation measures (see Item 3)

Not mitigation measures recommended.

Notes:

A wire frame model is a computer-generated representation of a photographic view. In a wire frame model, the mine facilities are distinguished from the surrounding topography by differentiation in color, usually in extreme contrasts, in order to clearly delineate the proposed action from the existing topography (ViewPoint Services Inc. 2012).

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 8/15/2014

District/ Field Office: Ely, NV

Resource Area:

Activity (program): Mining

SECTION A. PROJECT INFORMATION

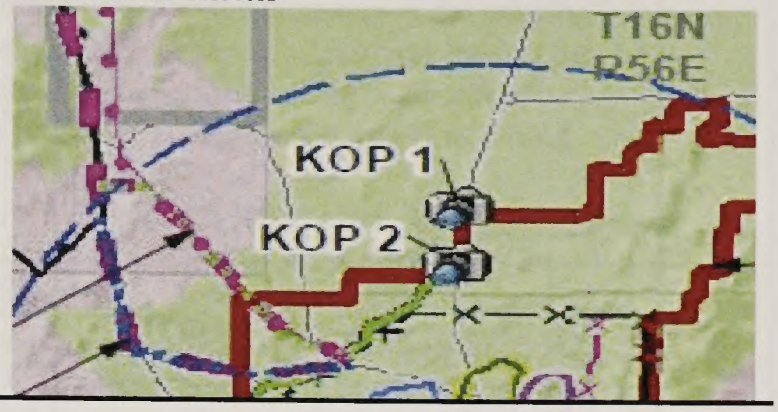
1. Project Name
Midway Gold Rock EIS

2. Key Observation Point
KOP 2 / GPS 18 NEW: Looking southwest on BLM Road 4006 west of the intersection of BLM Road 4006 and CR 1177 (Easy Junior Road). KOP is located at the northern boundary of the Plan area.

3. VRM Class
IV

4. Location
Township 16N
Range 56E
Section 32

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Foreground: Flat to rolling Mid ground: Low, rounded, gently sloping Background: High, angular hills and ridges	Medium height (juniper) Low, rounded, sparse and dense (sagebrush and forbs)	Linear, rectangular (existing unpaved road)
LINE	Vertical, diagonal and curved	Rugged, irregular	Low and horizontal
COLOR	Tan (patches of bare ground in foreground), gray and blue hills (in background). The unvegetated areas near the existing unpaved road are light brown.	Sage green (scrub brush), dark green (juniper trees in background)	Light brown (existing unpaved road)
TEX-TURE	Fine to medium	Medium to coarse	Smooth to coarse and dull existing road in the foreground

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	None of the proposed activity landforms (waste rock disposal areas, heap leach pile or other land alterations) would be visible from this KOP.	Portions of the widened portion of BLM 4006 introduced by the proposed activity would not be vegetated during operations.	Under all alternatives, the proposed power line poles (monopoles) would introduce thin vertical forms low on the horizon in the middleground area. Under all alternatives except the Northwest Main Access Route Alternative, Northern Power Line Route and Northwest Main Access Route, Southern Power Line Route, the widened portion of BLM 4006 would introduce a thin horizontal form in the middleground area. Under the Northwest Main Access Route Alternative, Northern Power Line Route Alternative and Northwest Main Access Route Alternative, Southern Power Line Route, the widened portion of BLM 4006 would introduce a thick horizontal form in the middleground area.

Form 8400-4 Visual Contrast Rating Worksheet

KOP 2 / GPS 18 NEW: Looking southwest on BLM Road 4006 west of the intersection of BLM Road 4006 and CR 1177 (Easy Junior Road). KOP is located at the northern boundary of the Plan area.

Section A. Project Information, Section B. Characteristic Landscape Description, Section C. Proposed Activity Description

LINE	None of the proposed activity landforms (waste rock disposal areas, heap leach pile or other land alterations) would be visible from this KOP.	The widened portion of BLM 4006 would create irregular, thin to thick lines of unvegetated surfaces.	Low and vertical (power line poles) and thin, curvilinear lines (overhead conductors) low on the horizon in the middleground. Under all alternatives except the Northwest Main Access Route Alternative, Northern Power Line Route and Northwest Main Access Route, Southern Power Line Route, the widened portion of BLM 4006 would introduct a thin horizontal line in the middleground area. Under the Northwest Main Access Route Alternative, Northern Power Line Route Alternative and Northwest Main Access Route Alternative, Southern Power Line Route, the widened portion of BLM 4006 would introduce a thick horizontal line in the middleground area.
COLOR	None of the proposed activity landforms (waste rock disposal areas, heap leach pile or other land alterations) would be visible from this KOP.	Under the Northwest Main Access Route Alternative, the brown colors of the proposed unvegetated landforms and tan to light brown colors of unvegetated widened portion of BLM 4006 would contrast with the green colors of the existing surrounding vegetation cover.	The proposed power line poles would be light-brown to brown, and non-reflective. Overhead conductors would appear gray in color. Under all alternatives, the widened portion BLM 4006 would be tan to light brown.
TEX- TURE	None of the proposed activity landforms (waste rock disposal areas, heap leach pile or other land alterations) would be visible from this KOP.	Under the Northwest Main Access Route Alternative, fine to medium texture of proposed landforms and unvegetated widened portion of BLM 4006 would contrast with the medium to coarse texture of the existing surrounding vegetation cover.	The proposed power line poles and overhead conductors would have indistinct textures. Under all alternatives, the texture of the widened portion of BLM 4006 would be fine to medium.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

		FEATURES											
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
DEGREE OF CONTRAST		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X				X	
	LINE				X			X			X		
	COLOR				X		X				X		
	TEXTURE				X		X					X	

2. Does project design meet visual resource management objectives? X Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes X No (Explain on reverses side)

Evaluator's Names Date: 8/2014
Kathryn Cloutier, ARCADIS

SECTION D. (Continued)

Form 8400-4 Visual Contrast Rating Worksheet

KOP 2 / GPS 18 NEW

Section D. Contrast Rating – __ Short Term x Long-Term

Comments from item 2.

KOP 2 is at the northern boundary of the Plan area looking southwest on BLM 4006, west of the intersection of BLM 4006 and CR 1177 (Easy Junior Road).

Under all alternatives, the one or two poles at the start of the proposed power line that would be visible from KOP 2. The proposed power line poles visible from KOP 2 are located in an area designated as VRM Class IV. The proposed power line poles would introduce thin vertical lines in the middleground area approximately 2 miles in the distance. The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area because the power line poles would be more than 3 miles away, low on the horizon, and are anticipated to blend into the horizon and be difficult to discern from the background. This KOP would be observed by casual observers traveling on BLM Road 4006 and on CR 1177. The proposed power line components would conform to the management objectives of VRM Class IV.
Under the Proposed Action, Northern Power Line Route Alternative, Southern Power Line Route Alternative, Modified County Road Re-Route Alternative and Western Tailings Storage Facility Alternative, if White Pine County decides to widen the proposed county road re-route to approximately 30 feet, a small portion of the widened BLM 4006 would be visible from KOP 2. The portion of BLM 4006 visible from KOP 2 would be located in an area designated as VRM Class IV. The widened road would introduce a thin horizontal line, portions of which would not be vegetated during operations; therefore, the tan to light brown colors and fine to medium texture of the unvegetated portions of the widened road would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover. The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area. This KOP would be observed by casual observers traveling on BLM Road 4006 and on CR 1177. The widened road would conform to the management objectives of VRM Class IV.

Under the Northwest Main Access Route Alternative, Northern Power Line Route and under the Northwest Main Access Route Alternative, Southern Power Line Route, roads along the access route would be widened to 66 feet. A segment of the widened BLM 4006 would be visible from KOP 2 (looking southwest). The portion of widened BLM 4006 that would be visible in KOP 2 would be located in an area designated as VRM Class IV. The road segment would appear as a thick horizontal line within the middleground area. The widened road would not be vegetated during operations; therefore, the tan to light brown colors and fine to medium texture of the unvegetated portions of the widened road would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover. The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area. This segment of widened road along the alternative main access is not expected to dominate the view of the casual observer; therefore would conform to the management objectives of VRM Class IV.

Form 8400-4 Visual Contrast Rating Worksheet

KOP 2 / GPS 18 NEW

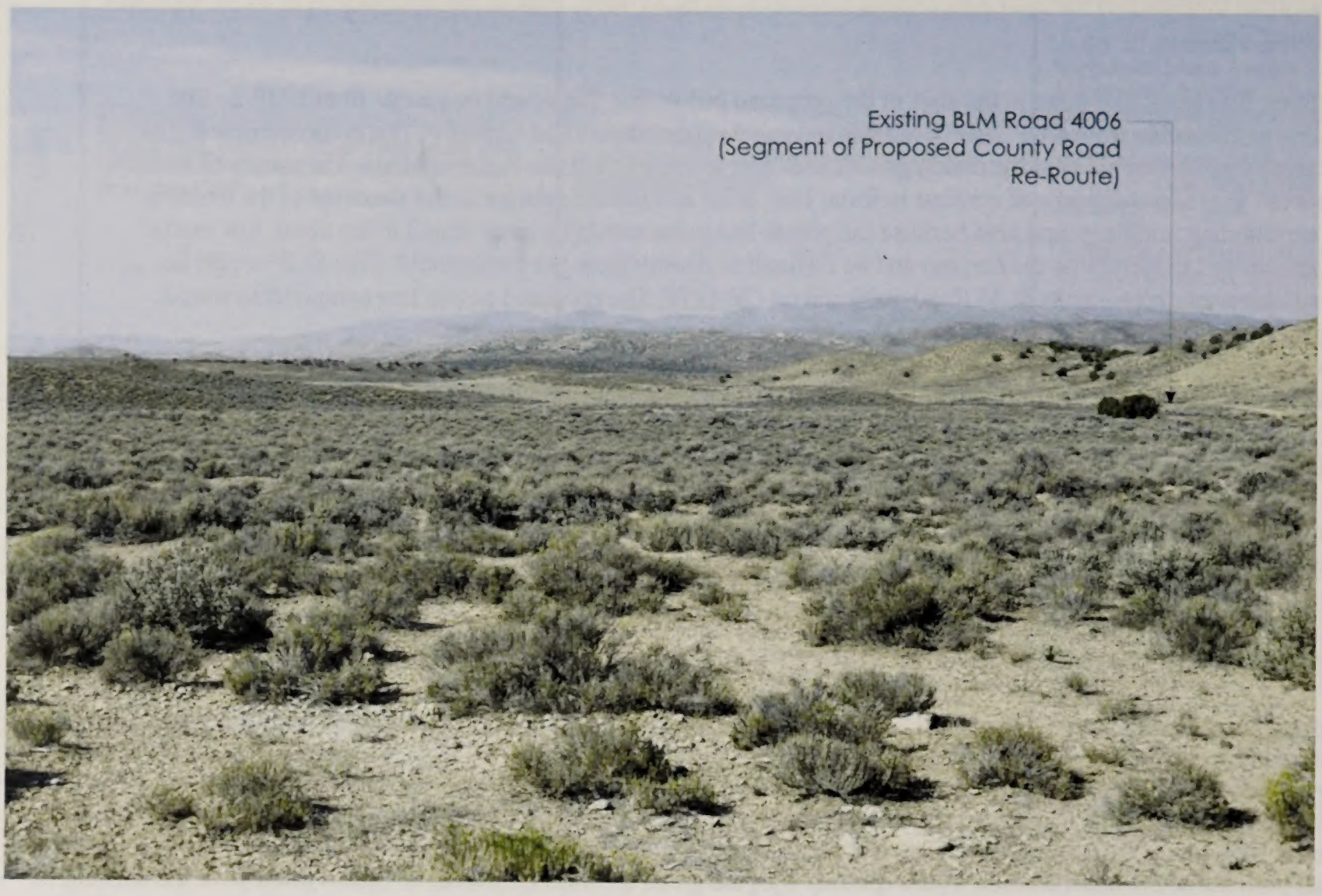
KOP 2 is at the northern boundary of the Plan area looking southwest on BLM 4006, west of the intersection of BLM 4006 and CR 1177 (Easy Junior Road).

Under all alternatives, the one or two poles at the start of the proposed power line that would be visible from KOP 2. The proposed power line poles visible from KOP 2 are located in an area designated as VRM Class IV. The proposed power line poles would introduce thin vertical lines in the middleground area approximately 2 miles in the distance. The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area because the power line poles would be more than 3 miles away, low on the horizon, and are anticipated to blend into the horizon and be difficult to discern from the background. This KOP would be observed by casual observers traveling on BLM Road 4006 and on CR 1177. The proposed power line components would conform to the management objectives of VRM Class IV.

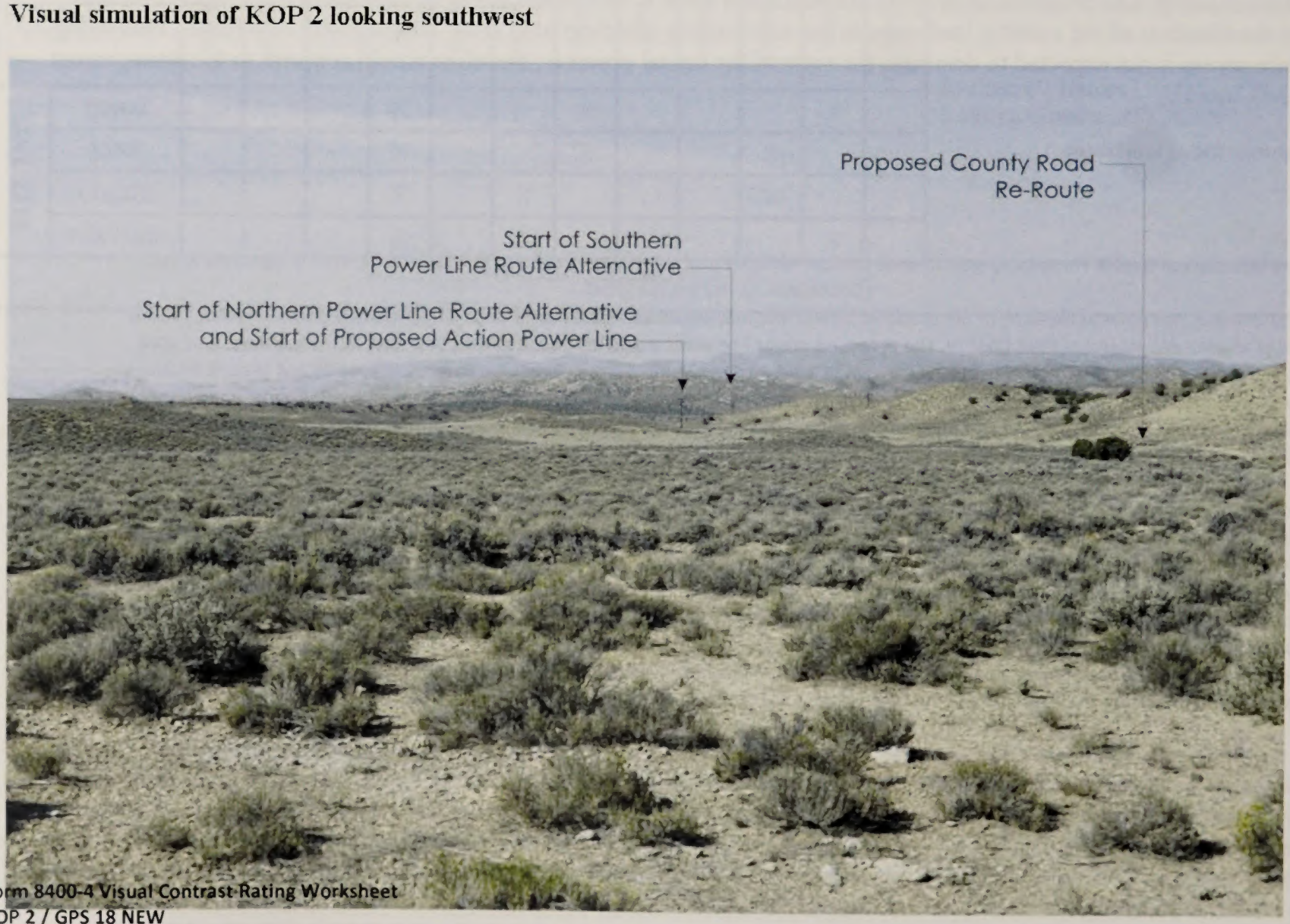
Under the Proposed Action, Northern Power Line Route Alternative, Southern Power Line Route Alternative, Modified County Road Re-Route Alternative and Western Tailings Storage Facility Alternative, if White Pine County decides to widen the proposed county road re-route to approximately 30 feet, a small portion of the widened BLM 4006 would be visible from KOP 2. The portion of BLM 4006 visible from KOP 2 would be located in an area designated as VRM Class IV. The widened road would introduce a thin horizontal line, portions of which would not be vegetated during operations; therefore, the tan to light brown colors and fine to medium texture of the unvegetated portions of the widened road would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover. The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area. This KOP would be observed by casual observers traveling on BLM Road 4006 and on CR 1177. The widened road would conform to the management objectives of VRM Class IV.

Under the Northwest Main Access Route Alternative, Northern Power Line Route and under the Northwest Main Access Route Alternative, Southern Power Line Route, roads along the access route would be widened to 66 feet. A segment of the widened BLM 4006 would be visible from KOP 2 (looking southwest). The portion of widened BLM 4006 that would be visible in KOP 2 would be located in an area designated as VRM Class IV. The road segment would appear as a thick horizontal line within the middleground area. The widened road would not be vegetated during operations; therefore, the tan to light brown colors and fine to medium texture of the unvegetated portions of the widened road would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover. The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area. This segment of widened road along the alternative main access is not expected to dominate the view of the casual observer; therefore would conform to the management objectives of VRM Class IV.

Existing Conditions KOP 2 looking southwest



Visual simulation of KOP 2 looking southwest



Form 8400-4 Visual Contrast Rating Worksheet
KOP 2 / GPS 18 NEW

~~Photograph of existing conditions, noting existing BLM Road 4006 (segment of proposed county road re-route)~~

Visual simulation of KOP2 looking southwest, noting start of Northern Power Line Route Alternative and start of Proposed Action power line. Noting start of Southern Power Line Route Alternative. Noting proposed count road re-route.

Additional Mitigating Measures (See item 3)

No mitigation measures are recommended.

Form 8400-4 Visual Contrast Rating Worksheet
KOP 2 / GPS 18 NEW

Additional Mitigating Measures (See item 3)

No mitigation measures are recommended.

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 8/15/2014

District/ Field Office: Ely District/Eagan FO

Resource Area: Ely District, NV

Activity (program): Mining

SECTION A. PROJECT INFORMATION

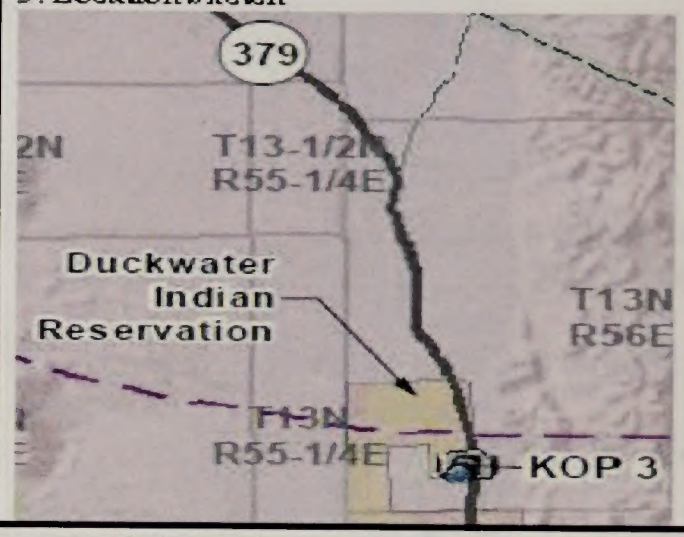
1. Project Name
Midway Gold Rock EIS

2. Key Observation Point
KOP 3 / PP3: Looking north towards the Plan area from the driveway to the Duckwater Hot Springs (Big Warm Springs). KOP 3 is within the Duckwater Reservation. KOP is approximately 15 miles south of the proposed waste rock disposal areas.

3. VRM Class
This location is within VRM Class III and the proposed project facilities that would be visible from this KOP are in the Plan area which is located within a VRM Class IV area.

4. Location
Township 13N
Range 56E
Section 32

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Foreground: Flat and horizontal Mid ground: Low, rounded Background: High, pyramidal and rounded	Low, rounded, irregular, sparse and dense (sagebrush and forbs)	Linear, curved (existing unpaved road, wooden post-and-rail fence, row of rocks)
LINE	Horizontal, diagonal and curved	Low, rounded, irregular, flat (grasses, forbs and shrubs)	Low and vertical, curved (existing unpaved road); low and horizontal (existing wooden post-and-rail fence and row of rocks)
COLOR	Tan, brown and gray (hills in background), tan (escarpment in middle ground on right)	Bright green (grass next to road), sage green (sagebrush); tan (tall grasses and forbs)	Tan (existing unpaved road [SR379] in the middle ground); brown and gray (wooden fence posts); white (rocks in foreground);
TEXTURE	Medium to course	Fine to coarse	Smooth to coarse and dull

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat or rounded, rectangular or trapezoidal landform introduced in the middle ground area from the Proposed Action tailings storage facility (TSF) embankment.	The landform introduced by the proposed activity would not be vegetated during operations.	None of the proposed activity structures (transmission line or other structures) would be visible from this KOP.
LINE	Near horizontal and irregular line at skyline.	The proposed activity landform would create irregular, thin lines of unvegetated surfaces.	None of the proposed activity structures (transmission line or other structures) would be visible from this KOP.
COLOR	The Proposed Action embankment would appear medium to dark brown.	The brown colors of the unvegetated Proposed Action Tailings Storage Facility embankment would contrast with the green colors of the existing surrounding vegetation cover.	None of the proposed activity structures (transmission line or other structures) would be visible from this KOP.
TEXTURE	Medium to coarse	Fine to medium texture of Proposed Action Tailings Storage Facility embankment would contrast with the medium to coarse texture of the existing surrounding vegetation cover.	None of the proposed activity structures (transmission line or other structures) would be visible from this KOP.

KOP 3 / PP3: Looking north towards the Plan area from the driveway to the Duckwater Hot Springs (Big Warm Springs). KOP 3 is within the Duckwater Reservation. KOP is approximately 15 miles south of the proposed waste rock disposal areas.

Section A. Project Information, Section B. Characteristic Landscape Description, Section C. Proposed Activity Description

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM			X				X					X
	LINE			X				X					X
	COLOR			X				X					X
	TEXTURE			X				X					X

2. Does project design meet visual resource management objectives? X Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes X No (Explain on reverses side)

Evaluator's Names Date: 8/2014
Kathryn Cloutier, ARCADIS

SECTION D. (Continued)

Comments from item 2.

KOP 3 is looking north towards the Plan area from the driveway to the Duckwater Hot Springs (Big Warm Springs). This KOP is located within the Duckwater Reservation and is approximately 15 miles south of the proposed waste rock disposal areas. This KOP is located within an area designated as VRM Class III.

Under the Proposed Action, a portion of the Proposed Action Tailings Storage Facility embankment would be visible from this KOP. The portions of the Proposed Action Tailings Storage Facility embankment visible from KOP 3 are located in an area designated as VRM Class IV. The Proposed Action Tailings Storage Facility embankment would introduce a flat or rounded near horizontal or irregular, rectangular or trapezoidal landform at the skyline in the middleground area at the skyline and would remain unvegetated during operations; therefore, the brown colors and fine to medium texture of the Proposed Action Tailings Storage Facility embankment would contrast with the green colors and medium to course textures of the existing surrounding vegetation. The Proposed Action Tailings Storage Facility embankment would represent a weak degree of contrast relative to the form, line, color and texture elements of the existing landscape of the surrounding middleground area because the proposed landform would be approximately 15 miles away, low on the horizon, and is anticipated to blend into the horizon and be difficult to discern from the background. This KOP would be observed by casual observers traveling on SR 379 and occupants of the Duckwater Reservation. The Proposed Action Tailings Storage Facility embankment would conform to the management objectives of VRM Class IV.

Form 8400-4 Visual Contrast Rating Worksheet

KOP 3 / PP3

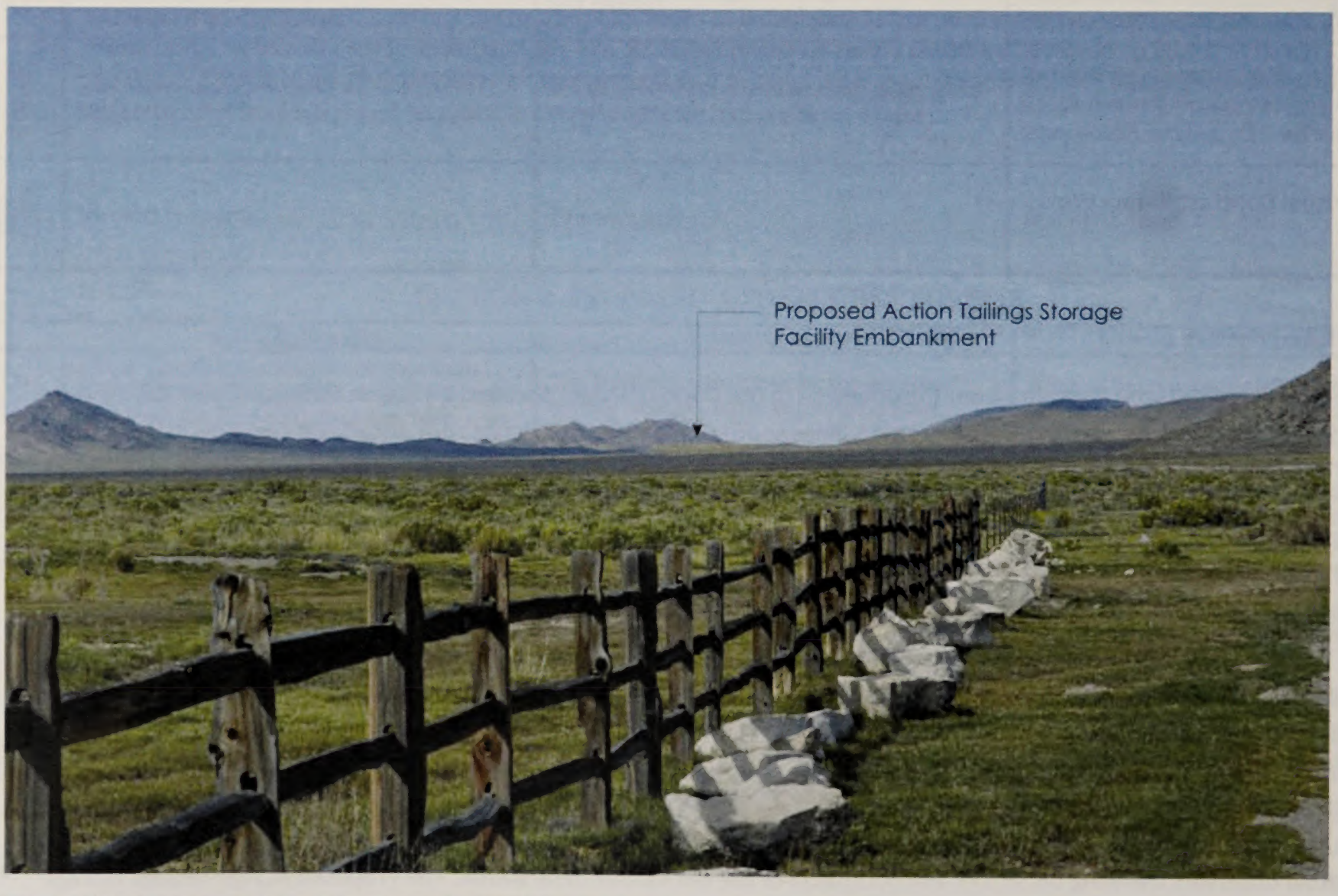
Section D. Contrast Rating – __ Short Term x Long-Term

KOP 3 is looking north towards the Plan area from the driveway to the Duckwater Hot Springs (Big Warm Springs). This KOP is located within the Duckwater Reservation and is approximately 15 miles south of the proposed waste rock disposal areas. This KOP is located within an area designated as VRM Class III.

Under the Proposed Action, a portion of the Proposed Action Tailings Storage Facility embankment would be visible from this KOP. The portions of the Proposed Action Tailings Storage Facility embankment visible from KOP 3 are located in an area designated as VRM Class IV. The Proposed Action Tailings Storage Facility embankment would introduce a flat or rounded near horizontal or irregular, rectangular or trapezoidal landform at the skyline in the middleground area at the skyline and would remain unvegetated during operations; therefore, the brown colors and fine to medium texture of the Proposed Action Tailings Storage Facility embankment would contrast with the green colors and medium to course textures of the existing surrounding vegetation. The Proposed Action Tailings Storage Facility embankment would represent a weak degree of contrast relative to the form, line, color and texture elements of the existing landscape of the surrounding middleground area because the proposed landform would be approximately 15 miles away, low on the horizon, and is anticipated to blend into the horizon and be difficult to discern from the background. This KOP would be observed by casual observers traveling on SR 379 and occupants of the Duckwater Reservation. The Proposed Action Tailings Storage Facility embankment would conform to the management objectives of VRM Class IV.

Existing conditions KOP 3 looking north

Visual simulation of KOP 3 looking north



Form 8400-4 Visual Contrast Rating Worksheet
KOP 3 / PP3
Photograph of existing conditions KOP3 looking north
Visual simulation of KOP3 looking north, noting Proposed Action Tailings Storage Facility Embankment

Additional Mitigating Measures (See item 3)

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No mitigation measures are recommended.

Additional Mitigating Measures (See item 3)

No mitigation measures are recommended.

Form 8400-4

Form 8400-4 Visual Contrast Rating Worksheet
KOP 4 / SP-1: Looking northeast from SR 379 (Duckwater Road) near the intersection of Duckwater Road and BLM 4006/CR 1180, approximately 8 miles south/southwest of the proposed waste rock disposal areas (across the valley). KOP 4 is located in an area known as Bull Fork in Nye County.
Section A. Project Information, Section B. Characteristic Landscape Description, Section C. Proposed Activity Description

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: 8/15/2014

District/ Field Office: Ely District/Eagan FO

Resource Area: Ely District, NV

Activity (program): Mining

SECTION A. PROJECT INFORMATION

1. Project Name
Midway Gold Rock EIS

4. Location
Township 14N

Range 55E

Section 22

2. Key Observation Point
KOP 4 / SP-1: Looking northeast from SR 379 (Duckwater Road) near the intersection of Duckwater Road and BLM 4006/CR 1180, approximately 8 miles south/southwest of the proposed waste rock disposal areas (across the valley). KOP 4 is located in an area known as Bull Fork in Nye County.

3. VRM Class
This location is within VRM Class III and the proposed project facilities that would be visible from this KOP are in the Plan area which is located within a VRM Class IV area.

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Foreground: Flat, gently sloping Mid ground: Low, rounded Background: High, pyramidal (Mount Hamilton and closed Easy Junior Mine waste rock disposal area and heap leach pile (in background)	Medium height (juniper) Low, rounded, irregular, sparse and dense (sagebrush and forbs)	No existing structures are visible.
LINE	Vertical, diagonal and curved	Low, rounded, irregular, flat (grasses, forbs and shrubs)	No existing structures are visible.
COLOR	Tan and brown (bare ground in foreground and escarpment in middleground), light tan (existing Mount Hamilton Mine) blue and grey closed Easy Junior Mine waste rock disposal area and heap leach pile (in background)	Sage green (sagebrush) and brown	No existing structures are visible.
TEXTURE	Fine to medium	Medium to coarse	No existing structures are visible.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	The proposed north and south waste rock disposal areas (WRDAs) and the heap leach pile would introduce flat to rounded, rectangular or trapezoidal landforms in the middleground area.	Landforms introduced by the proposed activity would not be vegetated during operations.	None of the proposed activity structures would be visible from this KOP.
LINE	The proposed activity landforms would appear as near horizontal and irregular lines below the horizon.	The proposed landforms would create irregular, thin lines of unvegetated surfaces.	None of the proposed activity structures would be visible from this KOP.
COLOR	The north and south WRDAs would appear dark brown. The heap leach pile would be medium to light brown.	The brown colors of the unvegetated proposed activity landforms would contrast with the green colors of the existing surrounding vegetation cover.	None of the proposed activity structures would be visible from this KOP.
TEXTURE	The textures of the proposed activity landforms would be fine to medium.	The fine to medium textures of the unvegetated proposed activity landforms would contrast with the medium to coarse textures of the existing surrounding vegetation cover.	None of the proposed activity structures would be visible from this KOP.

SECTION D. CONTRAST RATING __SHORT TERM X LONG TERM

DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM			X			X						X
	LINE			X				X					X
	COLOR		X				X						X
	TEXTURE		X				X						X

2. Does project design meet visual resource management objectives? X Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes X No (Explain on reverses side)

Evaluator's Names Date: 8/2014
Kathryn Cloutier, ARCADIS

SECTION D. (Continued)

Comments from item 2.

KOP 4 is looking northeast (across the valley) from SR 379 (Duckwater Road) near the intersection of Duckwater Road and BLM Road 4006/CR 1180, approximately 8 miles south/southwest of the proposed waste rock disposal areas (WRDAs). KOP 4 is located in an area known as Bull Fork in Nye County. This location is within an area designated as VRM Class III.

The proposed north and south WRDAs and the heap leach pile would be visible from this KOP. The portions of the proposed north and south WRDAs and the heap leach pile visible from KOP 4 are located in an area designated as VRM Class IV. The proposed WRDAs and heap leach pile would introduce flat to rounded, near horizontal and irregular lines below the horizon and would remain unvegetated during operations; therefore, the brown colors and fine to medium textures of the proposed landforms would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation. The visible portions of the proposed activity would represent a weak to moderate degree of contrast relative to the form, line, color and texture elements of the existing landscape of the surrounding middleground area because the proposed landforms would be approximately 8 miles away, and are anticipated to blend into the horizon and be difficult to discern from the background. This KOP would be observed by casual observers traveling on SR 379. The proposed activity landforms would conform to the management objectives of VRM Class IV.

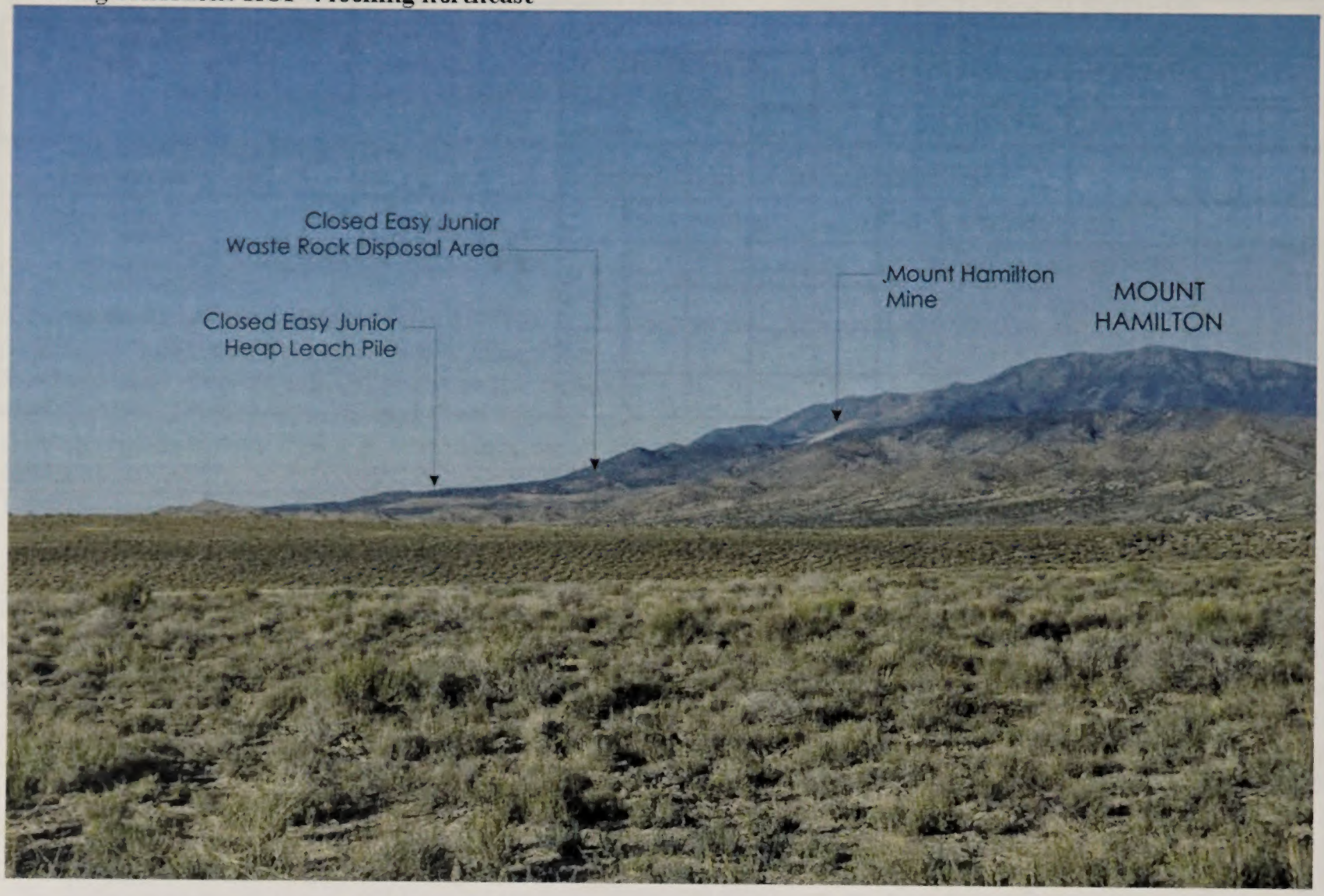
Form 8400-4 Visual Contrast Rating Worksheet
KOP 4 / SP-1

Section D. Contrast Rating – __ Short Term x Long-Term

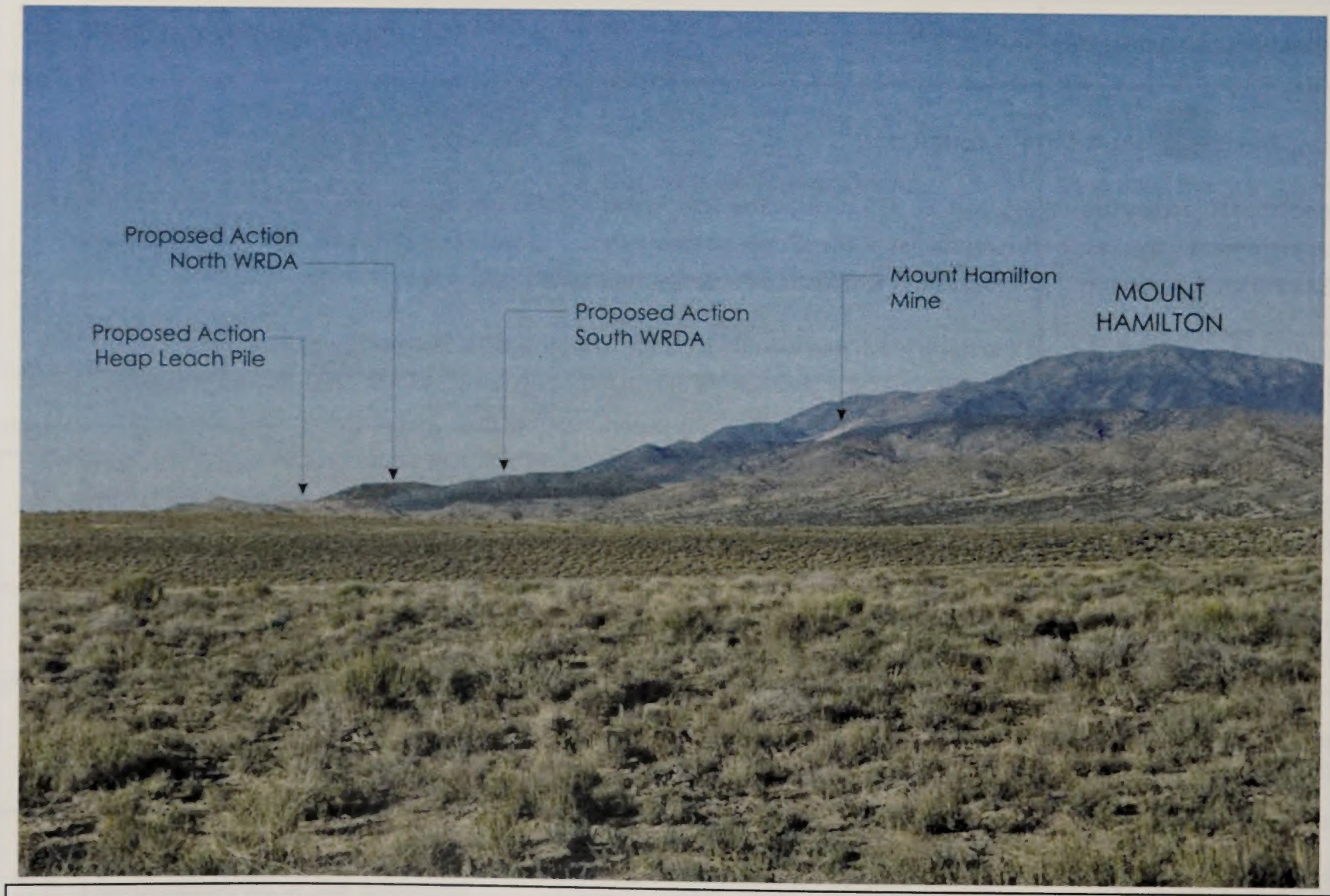
KOP 4 is looking northeast (across the valley) from SR 379 (Duckwater Road) near the intersection of Duckwater Road and BLM Road 4006/CR 1180, approximately 8 miles south/southwest of the proposed waste rock disposal areas (WRDAs). KOP 4 is located in an area known as Bull Fork in Nye County. This location is within an area designated as VRM Class III.

The proposed north and south WRDAs and the heap leach pile would be visible from this KOP. The portions of the proposed north and south WRDAs and the heap leach pile visible from KOP 4 are located in an area designated as VRM Class IV. The proposed WRDAs and heap leach pile would introduce flat to rounded, near horizontal and irregular lines below the horizon and would remain unvegetated during operations; therefore, the brown colors and fine to medium textures of the proposed landforms would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation. The visible portions of the proposed activity would represent a weak to moderate degree of contrast relative to the form, line, color and texture elements of the existing landscape of the surrounding middleground area because the proposed landforms would be approximately 8 miles away, and are anticipated to blend into the horizon and be difficult to discern from the background. This KOP would be observed by casual observers traveling on SR 379. The proposed activity landforms would conform to the management objectives of VRM Class IV.

Existing conditions KOP 4 looking northeast



Visual simulation of KOP 4 looking northeast



Form 8400-4 Visual Contrast Rating Worksheet
KOP 4 / SP-1
Photograph of existing conditions, KOP 4 looking northeast, noting closed Easy Junior Waste Rock Disposal Area, closed Easy Junior Heap Leach Pile, Mount Hamilton Mine, and Mount Hamilton
Visual simulation of KOP4 looking northeast, noting Proposed Actoin North WRDA, Proposed Action Heap Leach Pile, Proposed Action SWRDA, Mount Hamilton Mine and Mount Hamilton.

Additional Mitigating Measures (See item 3)

No mitigation measures are recommended.

Additional Mitigating Measures (See item 3)

No mitigation measures are recommended.

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Appendix 4A

Summary of Resource Mitigation Measures

APPENDIX 4A

SUMMARY OF RESOURCE MITIGATION MEASURES FOR THE GOLD ROCK MINE PROJECT

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1.0 INTRODUCTION

This document summarizes mitigation measures by resource as described in the Final Environmental Impact Statement (FEIS) prepared for the Gold Rock Mine Project. These mitigation measures were determined through consultation between Midway Gold U.S. Inc. (Midway), the Bureau of Land Management (BLM), the Nevada Department of Wildlife (NDOW), and the United States Fish and Wildlife Service (USFWS). Specific impacts to the affected resources are described in Chapter 4 of the FEIS.

Mitigation measures are designed to reduce impacts to the resources, which may occur from the selected action alternative. The BLM's approach to mitigation is to first avoid and then minimize the impacts on public lands from proposed activities. Minimization is achieved through design features, best management practices, and Applicant-Committed Environmental Protection Measures (Applicant-Committed EPMs), which are part of the project, and which are detailed in Chapter 2 of the FEIS.

However, not all impacts associated with the project as initially proposed and all action alternatives can be eliminated by these measures. For those impacts that cannot be avoided or minimized, measures to mitigate the impacts need to be developed with the goal of ensuring the viability of the impacted resources over time. In some cases, off-site mitigation may be required to compensate for resource impacts by replacing or providing substitute resources or habitat at a different location than the project area. This on-site and off-site mitigation is used to increase the BLM's ability to fulfill its resource management objectives of multiple use and sustained yield.

For each resource, where the impact analysis indicated that the implementation of the project as initially proposed or any of the action alternatives would have a significant impact on a resource, mitigation measures for the resource are included in the mitigation plan. Where impacts were avoided through project design or Applicant-Committed EPMs, or where no mitigation was recommended by the EIS, mitigation for the resource is not described in this document. Resources addressed in this document include soils, prime and unique farmlands, wildlife resources, range resources, and cultural resources.

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2.0 SOILS

2.1 Mitigation

The following mitigation measures for soils have been proposed in the EIS.

EIS Mitigation Measure Soils-1: During reclamation activities, compacted soil surfaces would be loosened through ripping or other means of loosening surface soils.

2.2 Completion Schedule

EIS Mitigation Measure S-1: This mitigation measure would be implemented during reclamation activities.

2.3 Determination of Effectiveness of Proposed Mitigation

Post-mitigation implementation and effectiveness monitoring would occur during revegetation success monitoring and a monitoring report would be sent to the BLM Ely District Office following each monitoring event. In reclaimed areas, revegetation success monitoring would be conducted for 3 years following completion of reclamation or until approval of the reclamation by the BLM.

2.4 Residual Impacts from Mitigation

No negative impacts are expected from the implementation of this mitigation.

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3.0 PRIME AND UNIQUE FARMLANDS

3.1 Mitigation

The following mitigation measures for prime and unique farmlands have been proposed in the EIS.

EIS Mitigation Measure F-1: During reclamation activities, compacted soil surfaces would be loosened through ripping or other means of loosening surface soils.

3.2 Completion Schedule

EIS Mitigation Measure F-1: This mitigation measure would be implemented during reclamation activities.

3.3 Determination of Effectiveness of Proposed Mitigation

Implementation and effectiveness monitoring would occur during revegetation success monitoring and a monitoring report would be sent to the BLM Ely District Office following each monitoring event. In reclaimed areas, revegetation success monitoring would be conducted for 3 years following completion of reclamation or until approval of the reclamation by the BLM.

3.4 Residual Impacts from Mitigation

No negative impacts are expected from the implementation of this mitigation.

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4.0 WILDLIFE

4.1 Mitigation

4.1.1 Mule Deer

Mitigation Measure W-1: Under all action alternatives, to offset mule deer crucial winter range lost through project-related activities, Midway could coordinate with NDOW to develop and implement reasonable mitigation measures and timelines. Mitigation measures could include monetary compensation and/or off-site habitat conservation or restoration of mule deer crucial winter range, as appropriate. Because locatable mineral mining is a nondiscretionary action and mule deer is not a special status species, the BLM is not able to require such mitigation.

Mitigation Measure W-2: Under all action alternatives except the Western Tailings Storage Facility Alternative, to minimize impacts to mule deer crucial winter range habitat through project-related activities, Midway would move the mine area perimeter fence on the eastern side of the project area closer to the mine facilities while maintaining a technically safe and secure distance from mine facilities. This shift in the fence would maintain access to a larger area of mule deer crucial winter range than the proposed mine area fence.

The Western Tailings Storage Facility Alternative would include movement of the fence.

Mitigation Measure W-3: Under all action alternatives, as recommended in the Ely District Approved Resource Management Plan (BLM 2008), Midway would avoid performing surface disturbing exploration activities as appropriate in mule deer crucial winter range from November 1 to March 31.

4.1.2 Greater Sage-Grouse

Greater Sage-Grouse use a variety of habitats in and around the proposed project area.

The on-site compensatory mitigation provided below has been developed in response to direct impacts to Greater Sage-Grouse habitat, as well as impacts from raptors perching on power lines near leks that facilitate predation and from noise and human activity that can cause mortality.

The off-site mitigation provided below has been developed in response to residual, long-term surface disturbance to Greater Sage-Grouse Priority Habitat Management Area (PHMA) and General Habitat Management Area (GHMA) that would not be reclaimed. Off-site mitigation would be completed in coordination with applicable state and federal agencies and other private stakeholders.

The following mitigation measures for Greater Sage-Grouse have been proposed in the EIS.

On-Site Mitigation

EIS Mitigation Measure W-4: Under all action alternatives except the Northwest Main Access Route alternatives and the Preferred Alternative, Midway would coordinate with the BLM and NDOW to develop a noise monitoring and mitigation plan that outlines:

- Protocols as recommended in Appendix M of the GRSG LUPA or best available science to collect ambient noise measurements in areas of existing and proposed development;
- Methods the proponent would use to manage project-related noise so that levels would not exceed 10 dBA above the measured ambient noise levels during the period of 1 hour

before sunrise until 3 hours after sunrise at the perimeter of potentially affected leks during the active breeding season of March 1 through May 15, consistent with existing Pan Mine noise monitoring requirements per BLM (2013));

- Strategies to differentiate between mine-related travel and other travel on the proposed main access route, if practical;
- Consideration of and correlation with available site-specific Greater Sage-Grouse lek survey data and habitat use information including currently contracted USGS studies; and
- Adaptive management mitigation measures to be implemented in response to observations of noise levels higher than 10 dBA above observed ambient noise levels at lek perimeters.

Noise monitoring would be conducted at the active Seligman Canyon lek, which is located within 0.25 mile of the existing main access route.

The noise monitoring and mitigation plan would be approved by the BLM and put in place no later than 90 days after the signing of the Notice to Proceed for this project. Mitigation measures in the final noise monitoring and mitigation plan could include:

- Reducing vehicle speed limits on the selected main access route during the breeding period from March 1 through May 15;
- Restricting the use of engine brakes during the breeding period from March 1 through May 15;
- Implementing noise-dampening measures on mine-related sources; or
- Scheduling deliveries and shift changes outside of the breeding period (March 1 to May 15 from 1 hour before sunrise to 3 hours after sunrise per BLM (2013)) and preventing mine-related traffic from using the selected main access route or Easy Junior Road between US 50 and the Gold Rock Mine Project during the breeding period.

If noise exceedances occur, mitigation measures would be implemented to limit noise to less than 10 dBA above ambient, consistent with MD SSS 2F and SSS 3E in the GRSG LUPA (BLM 2015c).

This noise monitoring and mitigation plan would be revisited and amended as necessary each year following the collection and review of all available data and resources. If, after 2 years of actual mining activity, noise monitoring data show that the proponent is in compliance with the mitigation measure, the BLM could consider discontinuing monitoring; however, if at some point during the life of the mine a change occurs that could lead to a significant increase in the noise level at a lek (for example, a significant change in processing method, equipment location or activity level), noise monitoring would be re-initiated.

EIS Mitigation Measure W-5: Under the Northwest Main Access Route alternatives and Preferred Alternative, Midway would comply with noise limit requirements established for the Pan Mine access road. Midway would coordinate with the BLM and NDOW to develop and submit a noise monitoring and mitigation plan subject to BLM approval that addresses noise impacts from traffic associated with both the Pan Mine and the Gold Rock Mine Project that could impact the active Southwest Pancake Summit and East Black Point leks. These leks are located approximately 1.1 and 1.6 miles, respectively, from the Pan Mine access road that would be part of the alternative main access route. This monitoring and mitigation plan would specify the steps that the operators of the Pan Mine and Gold Rock Mine Project would take to ensure that project-related noise levels at the two nearby leks would remain below 10 dBA above ambient.

This noise monitoring and mitigation plan would outline:

- Protocols as recommended in Appendix M of the GRSG LUPA or best available science to collect ambient noise in areas of existing and proposed development;
- Methods the proponent would use to manage project-related noise so that levels would not exceed 10 dBA above the measured ambient noise levels during the period of 1 hour before sunrise until 3 hours after sunrise at the perimeter of potentially affected leks during the active breeding season of March 1 through May 15, consistent with existing Pan Mine noise monitoring requirements per BLM (2013));
- Strategies to differentiate between mine-related travel and other travel on the proposed main access route, if practical;
- Consideration of and correlation with available site-specific Greater Sage-Grouse lek survey data and habitat use information including currently contracted USGS studies; and
- Adaptive management and mitigation measures to be implemented in response to observations of noise levels higher than 10 dBA above observed ambient noise levels at lek perimeters.

This noise monitoring and mitigation plan would be revisited and amended as necessary each year following the collection and review of all available data and resources. If, after 2 years of actual mining activity, noise monitoring data show that the proponent is in compliance with the mitigation measure, the BLM could consider discontinuing monitoring; however, if at some point during the life of the mine a change occurs that could lead to a significant increase in the noise level at a lek (for example, a significant change in processing method, equipment location or activity level), noise monitoring would be re-initiated.

EIS Mitigation Measure W-6: Under all action alternatives except the Northwest Main Access Route alternatives and the Preferred Alternative, Midway would provide at least one breeding season of baseline ambient noise data prior to beginning construction activities.

Under the Northwest Main Access Route alternatives and Preferred Alternative, the alternative main access route would include the Pan Mine access road. Midway has already collected baseline ambient noise data, as well as monitoring data during construction and operation, at leks located near the Pan Mine access road. Therefore, no additional baseline noise data collection would be required under the Northwest Main Access Route alternatives or Preferred Alternative.

EIS Mitigation Measure W-7: Surface disturbance in PHMA and GHMA is summarized in Table 4.9-5 of the FEIS. Under all action alternatives, to mitigate impacts to Greater Sage-Grouse and use of its habitat, Midway would bury the distribution power line from the mine to the existing Easy Junior water supply well, if feasible, based on soil conditions and other technical aspects. A surface area approximately 20 feet wide would be disturbed along the length of the route. Burying this lower voltage power line would involve direct burial of a distribution power cable (i.e., 25 kV) and installation of in-ground 6 ft cubical junction boxes or "pull boxes" spaced every 1,000 feet to 5,000 feet. No maintenance road would be required or established. If burial of the power line from the mine to the Easy Junior well is technically feasible, and if the existing water pipeline would require replacement, the power line and water pipeline would be co-located and buried within the existing water pipeline corridor.

If burial of the power line is not technically feasible, Midway would install an above-ground power line and two-track maintenance road along a route that would minimize new disturbance in or avoid Greater Sage-Grouse PHMA and GHMA. Where feasible, the power line route would be

co-located with existing disturbance. Midway would use APLIC avian deterring design measures (APLIC 2006, 2012), BMPs (APLIC 2015), or best available technology to discourage birds from perching on power lines or poles. This proposed mitigation is consistent with GRSG LUPA MDs SSS 1B; MDs SSS 2C, SSS 3B, and SSS 4 regarding RDF GEN 11 and MD LR 10 (FEIS Appendix 1A).

EIS Mitigation Measure W-8: Under all action alternatives, if a second water supply well is required, Midway would bury the distribution power line from the existing Easy Junior water supply well to the second well, if feasible, based on soil conditions and other technical aspects. The second well would be located within 0.5 mile of the existing Easy Junior well. An area approximately 20 feet wide would be disturbed along the length of the route. Burying this power line would involve direct burial of a distribution power cable (i.e., 25 kV) and installation of in-ground 6 ft cubical junction boxes or "pull boxes" spaced every 1,000 feet to 5,000 feet. No maintenance road would be required or established.

Off-Site Mitigation

EIS Mitigation Measure W-9: Under all action alternatives, to offset residual (long-term unreclaimed) direct surface disturbance impacts to Greater Sage-Grouse PHMA and GHMA, Midway would provide voluntary off-site mitigation on lands near the proposed project area.

Table 4A-1 presents acres of long-term surface disturbance that would not be reclaimed in PHMA and GHMA based on the GRSG LUPA (BLM 2015c).

Table 4A-1 Residual Surface Disturbance Impacts to Greater Sage-Grouse Habitat

	Long-Term Disturbance (Not Reclaimed) in PHMA (acres)	Long-Term Disturbance (Not Reclaimed) in GHMA (acres)
Proposed Action	301	121
Northern Power Line Route Alternative	301	121
Southern Power Line Route Alternative	301	121
Northwest Main Access Route Alternative, Northern Power Line Route	301	121
Northwest Main Access Route Alternative, Southern Power Line Route0	301	121
Modified County Road Re-Route Alternative	301	121
Western Tailings Storage Facility Alternative[1]	268	110
Preferred Alternative[1]	268	109

Notes:
Acreage of disturbance was calculated using LUPA Greater Sage-Grouse Habitat Management Area Mapping (USGS 2014).
The values shown in this table indicate the number of acres of PHMA and GHMA within the areas that would not be reclaimed.

1 Under either the Western Tailings Storage Facility Alternative or the Preferred Alternative, a more compact facility layout would be constructed and stormwater control features and sediment basins would be installed in different locations, resulting in fewer acres of PHMA and GHMA that would not be reclaimed in comparison to the other action alternatives.

2 Long-term Surface Disturbance (Not Reclaimed) would include the 334-acre pit expansion, one 13-acre process pond converted to an evapotranspiration cell, stormwater control facilities, sediment basins, and disturbance associated with the proposed county road re-route construction and widening if White Pine County decides to upgrade the road (Figure 2.3-15). In total, 458 acres of surface disturbance would not be reclaimed under the Proposed Action (419 acres under the Preferred Alternative).

Under all action alternatives, the 334 acres disturbed during expansion of the pit would be permanently lost, as bare rock would be exposed. The remaining areas that would not be reclaimed would revegetate through natural processes. Sediment basins would remain in place to promote the potential post-mining land uses such as livestock grazing and wildlife use. The majority of the run-on diversion structures would also remain in place. The run-on diversion above the TSF and heap would be left in place and would continue to divert flow from the 100-year, 24-hour storm event around the reclaimed heap and process solution ponds.

The proposed project is a non-discretionary 43 CFR 3809 action, and the BLM's discretion is limited to preventing unnecessary or undue degradation. The proponent has proposed a robust suite of Applicant-Committed EPMs in their Proposed Action and all Alternatives (Table 2.3-8) and incorporated elements consistent with several Required Design Features and Management Decisions from the GRSG LUPA (BLM 2015c). Under all of the Gold Rock Mine Project action alternatives, including the BLM Preferred Alternative, impacts to Greater Sage-Grouse habitat have been avoided and minimized to the extent practicable.

Prior to issuance of the GRSG LUPA in 2015, the BLM and the proponent identified and negotiated voluntary funding of offset mitigation for the direct impacts of residual (long-term unreclaimed) surface disturbance. This offset mitigation would be off-site on nearby federal lands at a ratio of 3 acres of restoration per 1 acre of residual (long-term unreclaimed) direct surface disturbance (3:1) in PHMA and 2 acres of restoration for each 1 acre of residual direct surface disturbance (2:1) in GHMA. The BLM coordinated with NDOW on this voluntary plan.

After issuance of the GRSG LUPA in 2015, the BLM and the proponent identified and considered another voluntary mitigation option to offset residual direct surface disturbance impacts to Greater Sage-Grouse habitat by use of the Nevada Conservation Credit System (CCS) whereby the proponent would purchase credits on private lands for mitigation.

In accordance with a *Memorandum of Understanding between the BLM Nevada State Office and California State Office, and the Nevada Department of Conservation and Natural Resources, and the USFS Humboldt-Toiyabe National Forest* completed on April 1, 2016, the BLM coordinated with the Nevada Department of Conservation of Natural Resources Sagebrush Ecosystem Technical Team (SETT) (see also Appendix 1A of this FEIS):

- The BLM added the SETT as a cooperating agency in this environmental review process.
- The BLM determined that the proposed project was consistent with the GRSG LUPA.
- The BLM analyzed CCS mitigation in at least one alternative (the Preferred Alternative) of the FEIS.
- The BLM and the proponent coordinated with the SETT in the development of a desktop analysis using the Habitat Quantification Tool (HQT) and a site-specific analysis using the CCS tools, following the policies and procedures detailed in the HQT Scientific Methods Document and CCS Manual. Both the desktop analysis and site-specific analysis are described further below and in Appendix 1A of this FEIS.
- In considering the CCS, the BLM and the proponent examined off-site mitigation measures based initially on the results of the desktop analysis, and later, when available, on the results of the site-specific analysis.
- If the CCS is used, the proponent would obtain available credits prior to ground disturbance.
- Text in Appendix 1A of the FEIS discloses how net conservation gain would be quantified and achieved

In considering the CCS, the BLM and the proponent coordinated with the SETT in 2015 to calculate the number of debits (credit obligations) that would result from implementation of the Gold Rock Mine Project and to explore options for purchasing the corresponding number of

permanent credits in the CCS Registry. Both of these processes are summarized below and described in more detail in Appendix 1A.

The CCS tools calculate term credit obligations and permanent credit obligations. Term credit obligations reflect temporary impacts (for example, short-term impacts and long-term impacts that would be reclaimed). The duration of the credit obligation is dependent on the duration of the proposed activity or type of disturbance. Permanent credit obligations are based on area and type of impact that would occur where no reclamation or rehabilitation is proposed (for example, long-term unreclaimed disturbance impacts). For this non-discretionary action, the BLM and the proponent negotiated one mitigation option under which the proponent would purchase the final number of permanent credit obligations calculated for the Gold Rock Mine Project.

In 2016 the SETT conducted a desktop analysis of the Preferred Alternative to identify a preliminary number of credit obligations needed. Then a CCS-certified third-party verifier conducted requisite field surveys and applied the CCS tools using those data to identify final credit obligations. However, in 2016, no credits were available and estimation of cost per credit was not possible.

Also in 2016, the BLM identified firm acreage numbers for residual surface disturbance of Greater Sage-Grouse habitat due to the Gold Rock Mine Project (FEIS Table 4.9-9). The BLM identified proposed habitat restoration projects on federal lands nearby that have already undergone NEPA analysis where the voluntary, negotiated 3:1 PHMA and 2:1 GMHA offset mitigation might apply. A cost per acre of restoration treatment and associated monitoring was estimated. Based on this information, the proponent negotiated with the BLM to develop an offset mitigation option under which the proponent would voluntarily fund the implementation and monitoring of off-site restoration projects on federal lands nearby that have already undergone NEPA analysis. If this offset mitigation option were selected, the number of acres of residual disturbance within habitat management category to be mitigated would be based on best available site-specific science and proximity of off-site mitigation projects to the Gold Rock Mine Project. The CCS tools would be applied to proposed mitigation project, and results would be considered in the offset mitigation implementation plan, if feasible.

Best available site-specific science also would be used to determine existing Greater Sage-Grouse seasonal use and suitability in areas of proposed surface disturbance and identify possible mitigation measures. The off-site mitigation would occur at location(s) to be determined by the BLM in coordination with NDOW and the SETT. Improvements would be commensurate to the level of impacts, and preference would be given to treatments in close proximity to the project area that would benefit Greater Sage-Grouse known to use adjacent areas. Several watershed assessments are on-going in the region. Opportunities for habitat restoration within one of the assessment areas in which NEPA analysis is complete could be considered. Restoration treatment areas could be considered using the Fire and Invasives Assessment Tool (FIAT). These measures are consistent with GRSG LUPA MDs SSS 2B and SSS 3A.

The BLM would monitor the mitigation treatments for the life of the mine, with retreatment as needed using the proponent's funds earmarked for this purpose. Through application of the negotiated 3:1 and 2:1 ratio for mitigation, and monitoring and retreatment as needed, the mitigation would include provisions to ensure additionality, effectiveness and durability to account for any uncertainty as defined in the GRSG LUPA.

In 2017 the SETT updated the CCS tools and recalculated the credit obligations for the proposed project. At the time of writing of this FEIS, the availability and cost of a sufficient number of credits that could be purchased in proximity to the proposed project were uncertain.

Both offset mitigation options (use of the CCS and funding of other off-site restoration projects) are analyzed in the FEIS. The CCS tools would be applied to the selected mitigation option to provide additional information, where feasible. Implementation of either offset mitigation option would provide habitat improvements in PHMA and in GHMA, consistent with applicable laws and regulations. Consistency with the GRSG LUPA is documented in Appendix 1A of this EIS.

The proponent would select one of the two voluntary offset mitigation options analyzed in this FEIS, or a combination thereof, prior to issuance of the ROD. The BLM would include a description of the selected mitigation option in the ROD. Within 90 days of issuance of the ROD, the BLM and the proponent, in coordination with NDOW and the SETT, would develop an offset mitigation implementation plan for the selected mitigation option. This plan would document the total area to be mitigated and specify mitigation measure(s), site selection procedures, timing of implementation, monitoring methods, treatment effectiveness criteria, retreatment procedures and cost estimation. The BLM would finalize and approve the offset mitigation implementation plan no later than 90 days after issuance of the ROD.

4.1.3 Pygmy Rabbit

Mitigation Measure W-10: Under all action alternatives, when exploration activities in the vicinity of pygmy rabbit habitat identified in the north-northwest portion of the Plan area are scheduled to occur during the natal season (February 15 to July 1 based on the latitude at which the project area is located and information in Elias et al. (2006) and Estes-Zumpf and Rachlow (2009)), Midway would apply a 200-foot buffer to potential pygmy rabbit habitat, and would avoid that buffered area where practicable. If Midway could not avoid surface disturbance in pygmy rabbit habitat during the natal season, consultation with BLM and NDOW wildlife biologists would occur to develop avoidance strategies and mitigation techniques.

4.1.4 Ferruginous Hawk

Mitigation Measure W-11: Under all action alternatives, if ferruginous hawks are found to be nesting on the project power poles, Midway would coordinate with the BLM and NDOW to implement measures to encourage the nesting birds to re-locate, if practicable. These measures could include providing alternate nest substrates such as artificial platforms where natural nest substrates are lacking. Artificial platforms, if used, would only be constructed outside of mapped Greater Sage-Grouse PHMA, GHMA, and Other Habitat Management Area.

4.2 Completion Schedule

4.2.1 Mule Deer

Mitigation Measure W-1: This mitigation could be implemented at any time agreed to by Midway and NDOW.

Mitigation Measure W-2: This mitigation would be implemented during construction activities.

Mitigation Measure W-3: This mitigation would take place throughout the project.

4.2.2 Greater Sage-Grouse

Mitigation Measure W-4: This mitigation measure would be implemented no later than 90 days before issuance of the Notice to Proceed.

Mitigation Measure W-5: This mitigation measure would be implemented no later than 90 days before issuance of the Notice to Proceed.

Mitigation Measure W-6: This mitigation measure would be implemented 1 year prior to construction activities.

Mitigation Measure W-7: This mitigation measure would be implemented during construction activities.

Mitigation Measure W-8: This mitigation measure would be implemented during construction activities.

Mitigation Measure W-9: The off-site mitigation would be implemented prior to the BLM's issuance of Notice to Proceed.

4.2.3 Pygmy Rabbit

Mitigation Measure W-10: This mitigation measure would be implemented during exploration activities.

4.2.4 Ferruginous Hawk

Mitigation Measure W-11: This mitigation measure would be implemented during construction activities.

4.3 Determination of Effectiveness of Proposed Mitigation

4.3.1 Mule Deer

Effectiveness of mitigation would be determined by Midway and NDOW.

4.3.2 Greater Sage-Grouse

On-site Mitigation

Effectiveness of noise impact mitigation measures would be determined as outlined in an approved noise monitoring and mitigation plan.

Effectiveness of predation impact measures would be determined by the BLM in consultation with NDOW.

Off-site Mitigation

Effectiveness of off-site mitigation would be determined by utilizing tools such as the Habitat Assessment Framework (HAF) protocol to summarize habitat conditions.

4.3.3 Pygmy Rabbit

Effectiveness of mitigation would be determined by the BLM in consultation with NDOW.

4.3.4 Ferruginous Hawk

Effectiveness of mitigation would be determined by the BLM in consultation with NDOW.

4.4 Residual Impacts from Mitigation

4.4.1 Mule Deer

No negative impacts are expected from the implementation of this mitigation.

4.4.2 Greater Sage-Grouse

On-site Mitigation

No negative impacts are expected from the implementation of this mitigation.

Off-site Mitigation

No negative impacts are expected from the implementation of this mitigation.

4.4.3 Pygmy Rabbit

No negative impacts are expected from the implementation of this mitigation.

4.4.4 Ferruginous Hawk

Providing alternate substrates, such as artificial nest platforms, could negatively impact other wildlife if the mitigation measures contribute to the expansion of the local raven population.

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5.0 RANGE RESOURCES

5.1 Mitigation

5.1.1 Mitigation Measure R-1:

Mitigation would be implemented under all action alternatives. The BLM would coordinate with the grazing permittees and Midway to identify opportunities for range improvement projects that could offset some short-term impacts.

5.2 Completion Schedule

Mitigation Measure R-1: This mitigation measure would be implemented prior to construction activities through the life of the mine.

5.3 Determination of Effectiveness of Proposed Mitigation

Effectiveness of mitigation would be determined by the BLM in consultation with grazing permittees.

5.4 Residual Impacts from Mitigation

No negative impacts are expected from the implementation of this mitigation.

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6.0 CULTURAL RESOURCES

6.1 Mitigation

6.1.1 Mitigation Measure C-1:

Mitigation would be performed in accordance with the Programmatic Agreement (Final EIS Appendix 1B), which outlines the methods of identification and treatment of cultural resources. If unanticipated TCPs are identified, protective and mitigation measures may need to be developed for TCPs in consultation with concerned Native American groups, the BLM, and SHPO.

6.2 Completion Schedule

Mitigation Measure C-1: This mitigation measure would be implemented prior to construction activities.

6.3 Determination of Effectiveness of Proposed Mitigation

Effectiveness of mitigation would be determined in consultation with the Nevada State Historic Preservation Office.

6.4 Residual Impacts from Mitigation

No negative impacts are expected from the implementation of this mitigation.

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7.0 REFERENCES

Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute and APLIC. Washington, D.C. 227 pages.

APLIC. 2012. Reducing Avian Collisions with Power Lines. The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C. 184 pages.

APLIC. 2015. Best Management Practices for Electric Utilities in Sage-Grouse Habitat. Edison Electric Institute and APLIC. Washington, DC. June.

Elias, Becky, L. Shipley, R. Sayler, and R.S. Lamson. 2006. Mating and Parental Care in Captive Pygmy Rabbits. Journal of Mammology, 87(5):921-928, October 2006. 8 pages. Available at: http://jmammal.oxfordjournals.org/. Accessed on November 8, 2016.

Estes-Zumpf, Wendy and J.L. Rachlow. 2009. Natal Dispersal by Pygmy Rabbits (Brachylagus Idahoensis). Journal of Mammology, 90(2):363-372, April 2009. 10 pages. [Web page]. Located at http://jmammal.oxfordjournals.org/. Accessed: November 8, 2016.

U.S. Bureau of Land Management (BLM). 2008. Ely District Record of Decision and Approved Resource Management Plan. U.S. Department of the Interior, Bureau of Land Management. August 2008.

BLM. 2013. Pan Mine Project Record of Decision Plan of Operations Approval, and Approval of Issuance of Right-Of-Way Grant. U.S. Department of the Interior, Bureau of Land Management. December 2013.

BLM. 2015. Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment. Attachment 2 From the USDI 2015 Record of Decision and Approved Resource Management Plan Amendments for the Great Basin Region including the Greater Sage-Grouse Sub-Regions of: Idaho and Southwestern Montana, Nevada and Northeastern California, Oregon, and Utah. US Department of the Interior Bureau of Land Management Nevada State Office, Reno, Nevada. 104 pages. September. [Web page]. Located at https://www.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=31103. Accessed: September 22, 2015.

USGS. 2014. Sage-Grouse Management Category Geographic Information System files. Western Ecological Research Center, Dixon Field Station, Dixon. CA. Nevada Sagebrush Ecosystem Program, Carson City, NV. August.

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Appendix 7A

Comments and Responses on the Draft Environmental Impact Statement for the Gold Rock Mine Project

APPENDIX 7A

Comments and Responses on the Draft Environmental Impact Statement for the Gold Rock Mine Project

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STATE OF NEVADA

DEPARTMENT OF WILDLIFE

1100 Valley Road
Reno, Nevada 89512
(775) 688-1500 • Fax (775) 688-1595

Brian Sandoval
Governor

TONY WASLEY
Director

RICHARD L. HASKINS, II
Deputy Director

PATRICK O. CATES
Deputy Director

March 23, 2015

Dan Netcher
Ely Bureau of Land Management
HC 33 Box 33500
Ely, NV 89301

RE: Gold Rock Draft EIS

Dear Mr. Netcher:

Thank you for the opportunity to review and provide comments on the Gold Rock Draft Environmental Impact Statement (DEIS). The Nevada Department of Wildlife (NDOW) is concerned with impacts to wildlife resources and their associated habitats within the proposed projeet area. NDOW
a does have concerns and questions relating to several aspects of the DEIS that are addressed below and in an attached table.

The DEIS states, "The volume of waste rock is known or potentially known to produce an acidic or otherwise contaminated leachate has not been adequately assessed." Acid generating waste rock has been identified in the existing WRDA created by Alta Gold, indicating that the potential for acid
b generating waste rock does exist on this site. Acid generating rock has the potential to have a significant impact on the environment and this document does not fully address the potential impacts or mitigation. A more intensive drilling program should be preformed to adequately assess the amount of potentially acid generating rock.

The state of Nevada has officially adopted the greater sage-grouse management categories map developed by USGS. The BLM has also adopted the management categories map and issued IM No NV-2015-017 to address the utilization of the management categories sage-grouse map. However, the IM did not provide direction of how projects that are already in the NEPA process will proceed and if or how the sage-grouse management categories map should be incorporated. For the Gold Rock project, these two
1c maps differ on the categorization of the sage-grouse habitats within the project area. The impetus is on the BLM to determine how to handle IM No. NV-2015-017 and the conflicting habitat categorizations. Once this is determined, NDOW will be able to provide substantive comments towards potential impacts, avoidance, mitigation, and an overall habitat assessment.

The language for mule deer mitigation provides no assurance that the impacts to the crucial winter mule deer range will be offset. Some of the mule deer that utilize this crucial winter range travel
1d nearly 100 miles, and this habitat is crucial for their existence as noted in NDOW's designation of the winter range. The cumulative impacts of infrastructure throughout the extent of this deer herd make the loss of crucial winter habitat that much more important. NDOW suggests that Midway offset the loss of crucial mule deer winter range at a 1:1 ratio at $600 per acre.

NDOW has reviewed the alternatives presented in the DEIS and would recommend the following alternatives be chosen to lessen the impacts on wildlife and their habitat: the Northwest Main Access Route (Southern Powerline Route), modified County Road re-route alternative, and the Western Tailing

RESPONSES TO LETTER 1

1a Thank you for your comment.

1b The BLM has added text to Section 1.2, expanding on closure activities performed in 2003 and 2004 including an investigation of "hot spots" of soil observed on the Easy Junior WRDA. Added text notes soil cover modeling performed as part of the closure activities. Text has also been added to clarify that seepage observed at the toe of the Easy Junior WRDA in 2004 continued for approximately six months, stopped, and has not been observed in the past 10 years.

Section 2.3.5 of the EIS describes the proposed handling of material identified as potentially acid generating or PAG, the soil cover designed to minimize infiltration, and the proposed adaptive management approach. Text has been added to this section.

Section 4.2.3 describes the analysis of potential impacts, including geochemical testing that has been performed to date and the number of samples analyzed, and notes that data gathered throughout mining operations would be reviewed with NDEP and the BLM to determine if an adaptive management plan would be necessary. These sections have been expanded in response to this and other comments to include a summary of the testing methods and results of the geochemical analysis performed as part of the baseline studies (Interralogic 2012).

1c The BLM used existing (pre-USGS) maps to develop the DEIS. Per the direction from the BLM Solicitor, the BLM has used the August 2014 USGS Greater Sage-Grouse habitat mapping for impact assessment in the FEIS. In Section 3.9, Wildlife Resources, Including Migratory Birds And Special Status Wildlife, Special Status Species, Greater Sage-Grouse, the BLM added a description of the USGS 2014 habitat categories and a cross-reference table for the different mapped Greater Sage-Grouse habitat categories.

1d Text in Section 4.9.3 and information in Table 4.9-1 notes that approximately 2,266 acres of surface disturbance would occur in mule deer crucial winter range under the Proposed Action and all alternatives except the Western Tailings Storage Facility Alternative.

Text was added to Section 4.9.9, Western TSF Alternative, to clarify that approximately 1,522 acres of surface disturbance would occur in mule deer crucial winter range under the Western Tailings Storage Facility Alternative, which as noted in the DEIS is 744 fewer acres than under the Proposed Action.

Section 4.9.11 (FEIS Section 4.9.12) notes that because locatable mineral mining is a nondiscretionary action, the BLM is not able to require such offset mitigation. However, text in section 4.9.11 (FEIS Section 4.9.12) notes that Midway could coordinate with NDOW to develop and implement reasonable mitigation measures, which could include monetary compensation and/or off-site mitigation of mule deer crucial winter range lost due to the proposed mine. No changes were made regarding these mitigation measures.

Storage Facility. The Northwest Main access route (southern powerline route) alternative will prevent traffic associated with the Gold Rock mine from affecting several leks that exist in close proximity to the proposed access route and will impact less sage-grouse habitat than the other alternatives. In addition
1e Northwest Main access route (southern powerline route) utilizes existing routes preventing further fragmentation of the landscape. The modified County road re-route alternative also utilizes existing roads on the landscape and skirts PGH sage-grouse habitat rather going directly through it. The Western Tailings Storage Facility would disturb less crucial winter range for mule deer and because of its design would require less borrow material decreasing the overall amount of acres disturbed.

Additional comments and concerns are attached.

Should you need clarification on any of the information provided, or require additional information, please contact me.

Sincerely,

Moira Kolada

Moira Kolada
Habitat Biologist, Eastern Region
Nevada Department of Wildlife
775-289-1655 ext 29
mkolada@ndow.org

1e Thank you for your recommendation. We factored your input into the development of a preferred alternative. The BLM's preferred alternative includes the Northwest Main Access Route Alternative, Southern Power Line Route; the Modified County Road Re-Route; and the Western TSF alternative.

	Chapter	Page Number	Comment
1f	2	23	It states that Midway will determine the percentage of PAG during mining. Midway should better define the acid generation potential to ensure there is adequate neutralizing material to protect meteoric water flowing through the waste rock prior to mining, not while mining.
1g	2	27	Midway states that sprayers could be used to apply cyanide to the heap leach. Spray emitters could increase ponding of open cyanide solution which potentially is a risk to wildlife.
1h	Figure	3.2-2	The color of the legend for the Plan Area Boundary should be changed to another color. It is hard to see the location of the boundary due to the color choice.
1i	3	74	The reference Connelly et al. 2004, the description of lek locations within Connelly is referencing another origin of the definition. Also what Connelly has referenced is dated back to 1952. Is there more recent literature in regards to lek locations that would be more adequate?
1j	3	77	Sage-grouse do prefer areas with more herbaceous understory, but often do use areas with little to no understory because that is what available or because they are in transition between more suitable habitats.
1k	4	39	The daily vehicle trips need to be provided for routes F and G. An estimate of road traffic needs to be depicted in order for vehicle/noise assessment of and recommendations to offset impacts to wildlife.
1l	4	4.9-1	This figure is so busy that it is hard to follow. Consider making it into a couple different maps or at least removing those attributes not directly related to the wildlife impact analysis.
1m	4	63	Appendix 3D is the not the "BLM Recommended Bird Nest Buffer Sizes"
1n	4	63	" To protect active raptor nests and surrounding habitat, construction activities would be restricted during the most sensitive portion of the nesting period (at a minimum from May 1 through July 15) within 0.5 mile of raptor nest sites unless the nest site has been determined to be inactive for at least the previous five years." This statement is confusing, is there adequate data do determine if the nest has been inactive for the previous 5 years? We recommend that the proponent be required to pay for raptor surveys from a qualified, NDOW-approved third party.
1o	4	65	To our knowledge ambient noise is not being collected spring 2015. If this is correct ambient noise collected for the Pan mine should be used or use existing literature to set a baseline, e.g. 20 dB (range 16-20) for baseline per: Patricelli et al. 2013. Recommended management strategies to limit anthropogenic noise impacts on greater sage-grouse in Wyoming.

1f Text in Section 2.3.5 Proposed Action, Waste Rock Disposal Areas notes that geochemical testing has been performed and that on-site testing would be performed during operations. Text in Section 3.2 summarizes results of the testing. The BLM has expanded this text to provide more details including the approximate quantity of PAG waste rock, the sulfur content and high neutralizing potential. This summary includes details related to the testing methodology, results, and the conclusions of the study. The text has also been expanded to include a description of the geochemical analysis performed at the nearby Pan Mine, which has a similar lithology. Section 2.3.5 describes the adaptive management plan that promotes a flexible approach protective of water resources.
The BLM clarified the text in section 4.2, adding text in bold: "**...Results of the geochemical analysis suggest that up to 60 percent of the waste rock may be PAG. This would suggest that up to 101,760,000 tons of PAG rock would result from mining operations. However, the analysis also identifies** a significant portion of the PAG-designated waste rock as likely to be inert due to low total sulfur content (less than 1.5 percent). In comparison, the average neutralizing potential (NP) of the **limestone** and **calcareous shales** is high, approximately 210 tons of neutralizing potential per ton of calcium carbonate, or roughly 21 percent, due to the high percentage of limestone and calcareous shale present. **The remaining 40 percent of the waste rock that is non-PAG has sufficient acid neutralizing characteristics and volume to encapsulate the PAG material.**"

1g The BLM added language to Section 2.3.6 noting that Midway would rip the surface of the heap as appropriate to minimize ponding.

1h The BLM deleted Figure 3.2-2 Topographic Map of the Plan Area and inserted a new, unrelated Figure 3.2-2 Estimated Average Annual Precipitation and Evapotranspiration during incorporation of the hydrology baseline report.

1i The text was updated to cite more recent literature and Nevada-specific information.

1j To address this comment, the BLM deleted the following text: "Although the lack of an herbaceous understory does not preclude use of an area by Greater Sage-Grouse, it suggests that the habitat in the Plan area may not be ideal for supporting large numbers of individuals." The BLM inserted the following text: "The authors of the site-specific baseline studies noted during multiple surveys that no Greater Sage-Grouse or Greater Sage-Grouse sign had been observed within the Study area. Results of baseline vegetation studies found that limited areas of habitat that have vegetation characteristics desirable for foraging or nesting occur within the Study area.

1k Road traffic estimates are already provided for Routes F and G in Table 4.8-6 of Section 4.8.6 as these routes are associated with the Northwest Main Access Route Alternative (not the Proposed Action). To minimize any confusion, we've added a sentence in Section 4.8.3 (the Proposed Action) referencing the Section (4.8.6) where one can find detailed information on road use estimates for Routes F and G.

1l Information on Figure 4.9-1 has been separated and presented on two different figures, Figures 4.9-1 and 4.9-2.

1m The text has been corrected to refer to appendix 2A - BLM Ely District Recommended Bird Nest Buffer Sizes.

1n The text has been revised: "To minimize potential impacts on raptors, Midway would have a qualified biologist conduct at least two pre-construction breeding-season raptor nest surveys per year - one in March and one in May, for each year when construction activity is planned to occur between May 1 and July 15. These surveys would take place within potential raptor nesting habitat in and within 0.5 mile of the area to be disturbed. If active raptor nests were found, a 0.5-mile buffer would be applied for avoidance of construction activity between May 1 and July 15, in accordance with the Ely District Resource Management Plan (BLM 2008b). Where a 0.5-mile raptor nest buffer was not feasible, Midway would coordinate with the USFWS, NDOW, and BLM on a case by case basis to develop appropriate protective measures for breeding raptors."

Similar text in Table 2.3-8 Applicant-Committed Environmental Protection Measures By Resource for Proposed Action has been revised for consistency.

1o Text in Section 4.9.3 was updated to note that baseline monitoring would be performed one year prior to the start of construction.

		Human-Wildlife Interactions 7(2):230-249.
4	64	The use of the ground/static wire style perch deterrent has been documented to be ineffective. NDOW would recommend changing this language to "best available technology" to allow for a broader range of perch deterrents to be used.
4	107	What is the status on the watershed analysis for the surrounding area? Some projects contained in the watershed analysis may provide an opportunity for sage-grouse habitat enhancement projects in the area to offset the impacts.
4	107	Since the Sage-grouse EIS has not been completed, it seems inappropriate to reference components of the EIS for mitigations purposes in this EIS.
4	107	It is inappropriate to address Midway's economic viability as an effected resource within the mitigation section. Economic viability is not a resource and hardship for the mine is not a resource. If this was addressing socioeconomics then that is more applicable. Furthermore if Midway is operating on such a tight margin that mitigation, which is the price of doing business on public lands in Nevada, isn't feasible, then the BLM should consider if the project is economically viable in the consideration of permitting this project.
4	107	The last bullet on the noise mitigation- Restricting mine related traffic on the Easy Junior Road and Green Springs Road is an alternative. If the route alternative is chosen then these restrictions will be implemented anyways, this cannot be a mitigation option.
4	107	The Ferruginous hawk mitigation should only be implemented outside of sage-grouse habitat.
Overarching		Access Routes: Throughout the document, it states that all workers, contractors, vendors, and visitors world be directed to use the main access route. However, a worker, contractor, vendor, or visitor may choose to approach by other roads that lead to the Plan Area. Midway should invest in adequate signage persuading workers, contractors, vendors, and visitors to use the access route alternative.

1p
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1p The text in sections 2.3.3 and 4.9.3 and Table 2.3-8 has been modified per this comment and Mount Wheeler Power comment 19k, using the following or similar language: "APLIC **construction or best available technology** to deter perching raptors".

1q Several watershed assessments are on-going in the region. Opportunities for habitat restoration within one of these assessment areas could be considered when selecting and prioritizing areas for off-site Greater Sage-Grouse habitat mitigation related to the Gold Rock Mine Project. Similar text has been added to Section 4.9.11 (FEIS Section 4.9.12).

1r Thank you for your comment. The Greater Sage-Grouse Land Use Plan Amendment (GRSG LUPA) Final EIS and ROD were issued in September 2015. The BLM has followed the applicable regulations, manuals and policies in the development of this document. Monitoring and mitigation measures listed in section 4.9.11 (FEIS Section 4.9.12) have been revised to be consistent with the GRSG LUPA and Minerals Resources Management Decisions (MRMD), subject to valid existing rights.

1s The BLM has revised the text as follows: "Effects on other resources: Preventing mine-related traffic from using Easy Junior Road and Green Springs Road during the breeding period would negatively impact socioeconomic resources because it would unreasonably limit mine business operations. Implementing mitigation measures such as these is not anticipated to impact water resources, geology and minerals, paleontological resources, soils, prime and unique farmlands, air quality, vegetation, wildlife resources, range resources, forest products and fuels, wild horses, cultural resources, Native American religious and traditional values, land use access and authorization, visual resources, recreation, or hazardous and solid wastes."

1t Text in Section 2.4 describes the alternatives to the Proposed Action, including other possible main access routes to which Midway would direct mine-related traffic. None of the action alternatives restrict traffic on the proposed main access routes. Text in Section 4.9.11 (FEIS Section 4.9.12) notes possible mitigation measures, including preventing mine-related traffic from using Easy Junior Road or Green Springs Road during the breeding period.

Text in Section 4.9.11 (FEIS Section 4.9-12) has been expanded to clarify that Midway would coordinate with BLM and NDOW to attempt to develop strategies to differentiate between mine-related travel and other travel on the proposed main access route, if practical.

1u The text was revised to state that this measure would only be implemented outside of Greater Sage-Grouse habitat.

1v Text has been expanded in Section 2.3 Proposed Action, noting that Midway would post signs at the turn-off from US 50 onto Easy Junior Road directing mine-related traffic to use the selected main access route to the east, Green Springs Road.

Text has been added to section 2.4.2 Route Alternatives, noting that Midway would post signs directing mine-related traffic to use the selected main access route.

Nevada State Clearinghouse
Department of Conservation and Natural Resources
901 South Stewart Street, Suite 5003
Carson City, NV 89701
775-684-2723
http://clearinghouse.nv.gov
www.lands.nv.gov

DATE: 3/9/2015
Division of Water Resources

Nevada SAI # E2015-116

Project: (DEIS – Gold Rock Mine Project)

_____No comment on this project __X____Proposal supported as written

AGENCY COMMENTS:

Any person proposing to build a dam (including tailings facilities) in this state shall, before constructing, reconstructing or altering of any dam, notify the State Engineer and must submit to the State Engineer in triplicate plans and specifications thereof for his approval in accordance with Nevada Revised Statue Chapter 535 and Nevada Administrative Code Chapter 535 prior to construction is to begin.

All waters of the State belong to the public and may be appropriated for beneficial use pursuant to the provisions of Chapters 533 and 534 of the Nevada Revised Statutes (NRS), and not otherwise. Any water used on the described project for construction, dust control, or maintenance should be provided by an established utility or under a permit.

Any water wells, monitor wells, or boreholes that are proposed to be drilled within the described lands are the ultimate responsibility of the entity allowing the drilling to occur and must be plugged and abandoned as required in Chapter 534 of the Nevada Administrative Code.

A search of water rights in the proposed mining area revealed that Midway Gold US Inc., have active water right applications under Application 80842. The Gold Rock Mine Project Plan Area boundary crosses the Railroad Valley hydrographic basin (173B Northern Part) into portions of other basins, while the Fenced Mine Area is completely within Railroad Valley.

If you have any questions, please contact this office at (775) 684-2800.

Sincerely,

P. Luke Opperman
Water Resource Specialist II

PLO/

RESPONSES TO LETTER 2

2 Nevada Division of Water Resources permits (Dam Safety Permit to Construct Impoundments and Permit to Appropriate Water) are included in the list of required permits presented in Table 1.9-1. The BLM has added text to section 3.2 noting that Midway's water rights applications 80842 and 82691 were approved by the Nevada Division of Water Resources on May 27, 2015.

Nevada State Clearinghouse Notice E2015-116

Project: DEIS - Gold Rock Mine Project

AGENCY COMMENTS: It is stated that the proposed Gold Rock Mine will employ 150 to 250 people and will drill wells to provide water to the facility. Please be aware that if a facility has 15 or more service connections or serves 25 or more people at least 60 days out of the year, the facility is required to become permitted as a public drinking water system. Plans and specifications for the drinking water system will need to be submitted to the Nevada Division of Environmental Protection (NDEP), Bureau of Safe Drinking Water (BSDW), for review and approval prior to construction. Questions or comments should be directed to Jim Balderson at 775-687-9517 or jbalderson@ndep.nv.gov .

Signature: Jim Balderson P.E.

Jim Balderson

Date: 02/26/2015

Jim Balderson P.E., Engineering Supervisor
Bureau of Safe Drinking Water
901 S. Stewart Street, Ste 4001
Carson City, NV 89701
775-687-9517
jbalderson@ndep.nv.gov

RESPONSES TO LETTER 3

3 A Public Water System Permit from NDEP BSDW has been added to the list of required permits presented in Table 1.9-1.

DATE: February 18, 2015

TO: Nevada State Clearinghouse, DCNR

FROM: Nevada Division of Environmental Protection, Bureau of Water Pollution Control

SUBJECT: State Clearinghouse Comments for E2015-116 (DEIS - Gold Rock Mine Project)

The Nevada Division of Environmental Protection (NDEP), Bureau of Water Pollution Control (BWPC) has received the aforementioned State Clearinghouse item and offers the following comments:

The project may be subject to BWPC permitting. Permits are required for discharges to surface waters and groundwater's of the State (Nevada Administrative Code NAC 445A.228). BWPC permits include, but are not limited to, the following:

- Stormwater Industrial General Permit
- De Minimis Discharge General Permit
- Pesticide General Permit
- Drainage Well General Permit
- Temporary Permit for Discharges to Groundwater's of the State
- Working in Waters Permit
- Wastewater Discharge Permits
- Underground Injection Control Permits
- Onsite Sewage Disposal System Permits
- Holding Tank Permits

Please note that discharge permits must be issued from this Division before construction of any treatment works (Nevada Revised Statute 445A.585).

For more information on BWPC Permitting, please visit our website at: http://ndep.nv.gov/bwpc/index.htm.

Additionally, the applicant is responsible for all other permits that may be required, which may include, but not be limited to:

- Dam Safety Permits - Division of Water Resources
- Well Permits - Division of Water Resources
- 401 Water Quality Certification - NDEP
- 404 Permits - U.S. Army Corps of Engineers
- Air Permits - NDEP
- Health Permits - Local Health or State Health Division
- Local Permits - Local Government

Thank you for the information and the opportunity to comment.

RESPONSES TO LETTER 4

4a Table 1.9-1 lists the permits that the BLM anticipates would be applicable for the Gold Rock Mine Project.

4b Please see response to comment 4a.

Skip Canfield

From: Julie Ernstein
Sent: Friday, March 27, 2015 12:19 PM
To: Skip Canfield
Subject: RE: Nevada State Clearinghouse Notice E2015-116 (DEIS - Gold Rock Mine Project)

Dear Skip,

I have read the BLM's *Draft Environmental Impact Statement for the Gold Rock Mine Project* (BLM/NV/EL/ES/15-05+1793) carefully. It appears to be a successful integration of both the NEPA and NHPA processes as relate to cultural resources concerns and project effects to historic properties.

In March, 2014, our office participated in the negotiation of a *Programmatic Agreement between the Bureau of Land Management, Egan Field Office and the Nevada State Historic Preservation Officer Regarding the Midway Gold US Inc. Gold Rock Project*, on which BLM and SHPO are Signatory Parties and Midway Gold, the Duckwater Shoshone Tribe and Te-Moak Tribe of Western Shoshone, White Pine and Nye Counties, and Mt. Wheeler Power each are concurring parties. Inclusion of the PA as Appendix IA of the DEIS, fulfills one of the PA's Whereas clauses which stated that the public would be afforded the opportunity to express views on the development of the PA and the Section 106 process concurrent with the public comment process for the DEIS for the Gold Rock Project.

One possible clarification relates to a statement made on p. 3-109 of the "Previous Cultural Resource Studies" discussion in the DEIS. The statement reads: "This tabulation of documented cultural resources includes a 1-mile buffer area round the Plan area. Therefore, it includes some sites outside the Plan area that are not likely to be affected by the Proposed Action." The SHPO would note that this area is not so much a "buffer" as it is the area of potential effect (APE) for assessing indirect (e.g., visual, audible, and atmospheric) effects for the proposed project as defined in Section II.C of the PA. Moreover, that section of the PA makes further provision that: "The indirect APE may extend beyond the one-mile convention to encompass properties that have traditional religious and cultural importance to Indian tribes or other geographically extensive historic properties such as trails or roads, when effects have been determined to extend beyond this distance."

Should you have any questions regarding these comments, please do not hesitate to contact me directly.

Best,

Julie

Julie H. Ernstein, Ph.D., RPA
Deputy SHPO
State Historic Preservation Office
901 S. Stewart St., Suite 5004
Carson City, NV 89701-5248
jernstein@shpo.nv.gov
tel: 775.684.3437
fax: 775.684.3442

From: scanfield@lands.nv.gov [mailto:scanfield@lands.nv.gov]
Sent: Tuesday, February 17, 2015 11:19 AM
To: Alan Jenne; clytle@lincolnnv.com; Brad Hardenbrook; cohnl@nv.doe.gov; Lowell Price; Mark Freese; Rich Harvey; Sandy Quilici; Tod.oppenborn@nellis.af.mil; zip.upham@navy.mil; Dave Marlow;

RESPONSES TO LETTER 5

5a Thank you for your comment.

5b The text in Sections 3.13 and 4.13 was revised per the comment.

Shimi.Mathew@nellis.af.mil; craig.mortimore@wildnevada.org; njboland.nev@gmail.com; Jennifer Crandell; 99abw.ccy@nellis.af.mil; whenderson@nvleague.org; dstapleton@nvnaco.org; alisah@unr.edu; Rebecca Palmer; ed.rybold@navy.mil; Sherry Rupert; Jennifer Scanland; dmouat@dri.edu; Alisanne Maffei; Michael "Bert" Bedeau; Bette Hartnett; mison@dot.state.nv.us; Warren Turkett; Michael Visher; Jim R. Balderson; jvanhavel@dot.state.nv.us; Lindsey Lesmeister; Steve Foree; Mark Enders; John C. Tull; John Christopherson; Richard M. Perry; Kevin J. Hill; jwoodruff@puc.nv.gov; endacottsteve@charter.net; jered.mcdonald@lcb.state.nv.us; Moira Kolada; rwarnold@hotmail.com; lkryder@co.nye.nv.us; Julie Ernstein; Claudia Vecchio; bob@intermountainrange.com; CAnderson@washoecounty.us; JEnglish@washoecounty.us; tmueller@dot.state.nv.us; Valerie King; Adele M. Basham; Skip Canfield; jolson@landercountynv.org; Tina Mudd; Kacey KC; Tim Rubald; janehfreeman@fs.fed.us; brian.hunsaker@us.army.mil; JSouba@ci.fallon.nv.us; robert.turner.3@us.af.mil; Robert.rule@navy.mil; Alysa.Keller@lcb.state.nv.us; Cayenne Engel; larry.m.cruz.civ@mail.mil; Elizabeth A. Kingsland; charles.r.king104.civ@mail.mil; Matt Maples; James Morefield; mstewart@lcb.state.nv.us; sscholley@lcb.state.nv.us; ddavis@unr.edu; munteanj@unr.edu; jprice@unr.edu; Karen Beckley; jhardcas@unr.edu; Mark Harris; Terry Rubald; Robert K. Martinez; Richard Ewell; Jennifer Newmark; brenda@cwsd.org; gderks@dps.state.nv.us; Madams@ag.nv.gov; WHowle@ag.nv.gov
Subject: Nevada State Clearinghouse Notice E2015-116 (DEIS - Gold Rock Mine Project)

NEVADA STATE CLEARINGHOUSE
Department of Conservation and Natural Resources, Division of State Lands
901 S. Stewart St., Ste. 5003, Carson City, Nevada 89701-5246
(775) 684-2723 Fax (775) 684-2721

TRANSMISSION DATE: 02/17/2015

U.S. Bureau of Land Management

Nevada State Clearinghouse Notice E2015-116
Project: DEIS - Gold Rock Mine Project

Follow the link below to find information concerning the above-mentioned project for your review and comment.
E2015-116 - https://www.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=49330

- **Please evaluate this project's effects on your agency's plans and programs and any other issues that you are aware of that might be pertinent to applicable laws and regulations.**
- **Please reply directly from this e-mail and attach your comments.**
- **Please submit your comments no later than Friday March 27th, 2015.**
-

Clearinghouse project archive

Questions? Skip Canfield, Program Manager, (775) 684-2723 or nevadaclearinghouse@lands.nv.gov

____No comment on this project ____Proposal supported as written

AGENCY COMMENTS:

Signature:

Date:

Requested By:

Distribution:
- 99ABW Nellis
- Division of Emergency Management
- Intermountain Range
Adele M. Basham - NDEP
Alan Jenne - Department of Wildlife, Elko
Alisa Huckle - UNR Library
Alisanne Maffei - Department of Administration
Alysa Keller - Legislative Counsel Bureau
Bert Bedeau - Comstock Historic District Commission
Bette Hartnett - State Energy Office
Bob Roper - Nevada Division of Forestry
Bob Turner - Nellis AFB
Brenda Hunt - CWSD
Cayenne Engel - Nevada Division of Forestry
Chris Anderson - Washoe County Health Department
Chuck King - Hawthorne Army Depot
Claudia Vecchio - Nevada Commission on Tourism
Cory Lytle - Lincoln County
Craig Mortimore - Wild Nevada
D. Bradford Hardenbrook - Department of Wildlife, Las Vegas
Dagny Stapleton - NACO
Dave Marlow -
David David - UNR Bureau of Mines
David Mouat - Desert Research Institute
Ed Rybold - NAS Fallon
Elizabeth A. Harrison - Tahoe Resource Team - Division of State Lands
Gary Derks - Division of Emergency Management
J Crandell - Colorado River Commission of Nevada

James D. Morefield - Natural Heritage Program
Jane Freeman - US Forest Service
Jason Van Havel - NDOT
Jason Woodruff - PUCN
Jeff Hardcastle - State Demographer
Jennifer Newmark - Nevada Natural Heritage Program
Jennifer Scanland - Division of State Parks
Jered McDonald - Legislative Counsel Bureau
Jim Balderson - NDEP
Jim English - Washoe County
Jim Olson - Lander County
Jim Souba - City of Fallon Public Works
John Christopherson - Nevada Division of Forestry
John Muntean - UNR Bureau of Mines
John Tull - NDOW
Jon Price - UNR Bureau of Mines
Julie Ernstein - State Historic Preservation Office
Kacey KC - Sagebrush Ecosystem Technical Team
Karen Beckley - State Health Division
Kevin Hill - Nevada State Energy Office
Larry Cruz - Hawthorne Army Depot
Levi Kryder - Nye County
Linda Cohn - National Nuclear Security Administration
Lindsey Lesmeister - NDOW
Lowell Price - Commission on Minerals
Major Brian Hunsaker - Nevada National Guard
Mark Enders - NDOW
Mark Freese - Department of Wildlife
Mark Harris, PE - Public Utilities Commission
Marta Adams - Attorney General
Matt Maples - NDOW
Michael J. Stewart - Legislative Counsel Bureau
Michael Visher - Division of Minerals
Mitch Ison - NDOT
Moira Kolada - NDOW
Nancy Boland - Esmeralda County
Rebecca Palmer - State Historic Preservation Office
Rich Harvey - Division of Forestry
Rich Perry - Nevada Division of Minerals
Richard Arnold - Nevada Indian Commission
Robert Martinez - Division of Water Resources
Robert Rule - NAS Fallon
Sandy Quilici - Department of Conservation & Natural Resources
Sherry Rupert - Indian Commission
Shimi Mathew - Nellis AFB
Skip Canfield - State Land Use Planning Agency
Stephen Foree - NDOW
Steve Endacott - City of Fallon
Susan Scholley - Legislative Counsel Bureau
Terry Rubald - Nevada Department of Taxation, Local Government, Centrally Assessed Property
Tim Rubald - Conservation Districts
Timothy Mueller - Department of Transportation
Tina Mudd - Dept of Agriculture
Tod Oppenborn - Nellis Air Force Base
Valerie King - NDEP
Warren Turkett - Colorado River Commission of Nevada
Wayne Howle - Attorney General
Wes Henderson - Nevada League of Cities
Zip Upham - NAS Fallon

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Gary Perea, Chairman
Laurie Carson, Vice Chairman
Carol McKenzie, Commissioner
Richard Howe, Commissioner
Mike Coster, Commisssioner

Nichole Baldwin, Ex-Officio Clerk of the Board

297 11th Street East, Suite 2
Ely, Nevada 89301
(775) 293-6562
Fax (775) 289-2066

commissioners@whitepinecountynv.gov

White Pine County
Board of County Commissioners

March 25, 2015

U.S. Department of the Interior
Bureau of Land management
Ely District Office
HC 33 Box 33500
Ely, NV 89301

Attn: Dan Netcher, Project Manager

RE: Gold Rock Mine Project
Draft Environmental Impact Statement

Dear Mr. Netcher:

White Pine County has always enjoyed the tax base created by the Mining Industry within our community. Current data shows nine mining operations exist within the county lines, supporting over 1,103 jobs. The total 2012 annual wage paid by the industry to its employees is estimated at $92,518,377.00 by the Innovations of American regions EDA database. This taxable household expenditure base will support our local businesses and keep those dollars within our local business climate.

The indicators that have the potential to impact our employment and public revenue base, housing, and demand for community services and schools have been stated, in our opinion, as accountable and responsible. Direct, indirect, and induced impacts will all benefit our County. With the estimates of 250 construction employees and project cost estimates between $270M and $300M, it is estimated that $20M to $22M will be spent locally for services to support this temporary employment base.

It is our understanding that operations will run approximately ten years, employing an average of 150 to 250 employees annually. Payroll is estimated to average between, $11.5M to $19M. Recreational-related and agricultural-related economic impacts will be minimal. Population-related social impacts will affect local housing and social service needs with net proceeds of mine tax allocation helping to offset those impacts. Currently, Midway Gold is collaborating with the Nevada Rural Housing Authority to develop twelve acres of vacant land to support Ely housing needs. Midway Gold is proving to be a great partner for White Pine County.

RESPONSES TO LETTER 6

6 Thank you for your comment. Socioeconomic existing conditions are presented in Section 3.18 and the socioeconomic analysis is presented in Section 4.18.1.

Your recommendations were taken into consideration during development of a preferred alternative. The BLM's preferred alternative includes the Northwest Main Access Route Alternative, Southern Power Line Route; the Modified County Road Re-Route; and the Western TSF alternative.

White Pine County fully supports the Socio-economic Resources section of the Draft Environmental Impact Statement. In addition we support and recommend the addition of the following alternatives:

- ES.4.3 – Southern Power Line Route Alternative
- ES.4.5 – Northwest Main Access Route Alternative, Southern Power Line Route
- ES.4.6 – Modified County Road Re-Route Alternative

Thank you for this opportunity to comment on the Draft Environmental Impact Statement for the Gold Rock Mine Project.

Sincerely,

White Pine County
Board of County Commissioners

Gary Perea, Chairman

Laurie L. Carson, Vice Chairwoman

Mike Coster, Commissioner

Richard Howe, Commissioner

Carol O. McKenzie, Commissioner

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EUREKA COUNTY BOARD OF COMMISSIONERS

J.J. Goicoechea, Chairman ⌖ Mike Sharkozy, Vice Chair ⌖ Fred Etchegaray, Member

PO Box 694, 10 South Main Street, Eureka, Nevada 89316

Phone: (775) 237-7211 ⌖ Fax: (775) 237-5212 ⌖ www.co.eureka.nv.us

March 30, 2015

Mr. Dan Netcher, Project Manager
Bureau of Land Management, Egan Field Office
HC 33 Box 33500
Ely, NV 89301-9408

RE: 3809 (NVL0100) NVN-91957; Gold Rock Mine Project Draft EIS

Dear Mr. Netcher:

We have reviewed the Draft EIS (DEIS) for the proposed Midway Gold Rock Mine Project. We are supportive of the Gold Rock Project and ask BLM to move forward with a Final EIS and Record of Decision granting approval.

As a cooperating agency, we had the opportunity to review and comment on the previous Preliminary Administrative Draft EIS and the Administrative Draft EIS. Our previous comments focused on the issues of primary importance and with a connection to Eureka County, namely socioeconomics, water resources, and livestock grazing (due to many of the AUMs allocated to Eureka County citizens and precedent related to AUM loss). We do not have any additional comments to provide on the Draft EIS. We want to note the commitment we have received by BLM to ensure our input and comments are adequately incorporated into the Final EIS.

Thank you for considering our previous comments. We look forward to coordinating with BLM and Midway Gold to reach completion of the Final EIS and signing of the Record of Decision in a timely manner.

Sincerely,

J.J. Goicoechea, DVM, Chairman
Eureka County Board of Commissioners

RESPONSES TO LETTER 7

7 Additional information on socioeconomic resources related to Eureka County has been added to Section 4.18, including text clarifying the estimated percentage of employees that would be hired from the local communities, the potential number of employees and direct employment wages or salaries by county, an analysis of the effects of worker relocation on the population of local communities including Eureka, and the disproportionate impact on fire and emergency medical service providers in Eureka County.

Additional information on water resources, including information from the baseline hydrogeology report (Hatch 2015), has been added to Section 4.2.

Applicant-Committed EPMs of installing cattle guards and pulling the mine area fence in closer to the mine facilities wherever feasible have been added to Table 2.3-8, information on AUMs has been clarified in Section 3.10, and potential impacts to livestock have been clarified in Section 4.10.3. A potential mitigation measure of developing range improvement projects that could offset some short term impact has been added to Section 4.10.11 (FEIS Section 4.10.12).

Mr. Dan Netcher,

Bureau of Land Management.

Subject: Midway Gold Rock Mine Project.

Mr. Netcher,

I hope this letter finds you well and would like to voice my support of the prospect of Midway Gold planning to develop the Gold Rock Mine.

Agru America is a manufacturer of geosynthetic liner materials in Fernley, NV and supplied the liners used for their Pan Project near Eureka, NV at their leach pad, ponds and channels. We employ 20 staff at our Nevada facility and 125 at the Georgetown and Andrews plants in South Carolina.

It is common knowledge that for every mine employee, 8 jobs are created to cater to the mining industry. With 150-250 positions being filled at Gold Rock Mine when it is operating, this means 1,200 to 2,000 people will be employed by companies like Caterpillar, Cyanco, Agru America and Western Nevada Supply to support the mine, not to mention the contractors and other staff that will be employed to build the mine. These are all taxpaying individuals that will help support our economy in Nevada through Sales Tax and throughout the USA with income tax. Add to this the taxes that the mine will be paying and this means the project will be a boon to our state's industry and economy.

The current mining industry trend is a move from insular and reactive to a socially integrated one that is acting early in the process being more of a partner with society. Mining, including agricultural needs, like fertilizer, is responsible for 45% of the world's economic activities while disturbing only around 1% of the earth's surface. We need to support ourselves, and mining is a big part of that as I have demonstrated. Midway has shown that they are socially responsible and proactive with the actions they took to adapt to, for example, the Sage Grouse situation at Pan Mine.

This letter is to support the mine and all the efforts that Midway is doing for us and the economy as a whole. When working with Midway at Pan, I found them to be very environmentally and economically responsible and like Pan, the Gold Rock Mine will be a benefit to the USA, Nevada and specifically the Elko, Ely and Eureka communities.

Sincerely,

Clark West
Western Region Manager

Clark West
Mining
Fernley Plant
2000 E. Newlands, Fernley, NV, 89408
Direct: 775-851-1240
Cell: 775846-5569
Email: cw@agruamerica.com

RESPONSES TO LETTER 8

8 The BLM added to section 3.18, noting the number of secondary jobs typically supported by each mining job: "A number of studies report that each employment position in the mining industry in Nevada supports between 3.5 and 4.2 other jobs throughout the economy (Dobra 2009; Nevada Mining Association 2010). Some portion of these positions, and their associated economic impacts, would be generated or supported within the affected area as described in the Construction and Operations sections below; other positions would be generated or supported outside the affected area. Because some portion of the employment positions generated or supported by construction and operation of the Proposed Action would be generated or supported outside the affected area, they and their associated economic impacts are not described here. Therefore, the employment and associated economic impacts presented in this section are conservative, in that additional employment and economic impacts would be generated in addition to those described below."

1.2. GR-1-28961

Table 1.5. Name and Address

Name	Ms. Diane Jarbawi
Address 1	5251 DTC Parkway
Address 2	Suite 1045
Address 3	
City	Greenwood Village
State	Colorado
Zip	80111
Country	United States
Day Phone	
Evening Phone	303-353-9700
Other Phone	
Fax Number	720-524-0651
Email	diane.jarbawi@ryan.com
Name	Ms. Diane Jarbawi
Agency	
Organization	
Position	

Table 1.6. Other Details

Submission Status	ACTIVE
Delivery Type	Front Offic Submission Form

Table 1.7. Comments

ID	1
Title	I'm all for developing the Gold Rock Project in Ely Nevada!
Text	Dear BLM, I am in favor of having the Gold Rock Project be developed and brought into production for a few reasons: 1. I believe in a county that has comodoties which are substantial to the human good and in which will generate revenue. 2. I blelieve in Nevada and their wonderful government which supports mine developers 3. I believe Midway Gold is a first class Mining Corporation with knowledgeable investors, managers, and employees who have the wellfare of those in the community at heart 4. This mine will have a strong, favorable, economic impact

9

Table 1.8. Disclaimers / Agreements

Withhold personally identifying information from future publications on this project?	N
Please include me on the mailing list for this project?	Y

RESPONSES TO LETTER 9

9 Thank you for your comment. Socioeconomic existing conditions are presented in Section 3.18 and the socioeconomic analysis is presented in Section 4.18.

Bureau of Land Management
MAR 19 2015
RECEIVED
Ely, NV

March 18, 2015

BLM Ely District Office
ATTN: Dan Netcher
HC 33 Box 33500
Ely, NV 89301

Mr. Netcher,

Please accept these comment for the Gold Rock Mine Draft EIS.

8,757 acres will be lost in our use area for grazing. So to off set this loss of forage we are requesting increased number mitigation through water sources and vegetation treatments.

10a To offset the mine impacts we are requesting a pipeline off the mine well running west with three seperate water sources distributed along the west side of the mining area and one pipeline running east into the Green Springs use area.

Also to reduce impacts to loss of forage. We would like the mine to fix the wells in the Monte Cristo Allotment.

This is in a different area, but it will help offset the loss of 8,000 plus acres in the Duckwater Allotment.

Also to offset impacts we would like mowing treatments in shrub dominant areas to increase forage lost within the mine operation. We will work with the mine and the BLM in identifying these areas.

Effects to our grazing operation include:

0b
1. Loss of 8,000 plus acres of forage.
2. Limited flexability in our grazing operation, this is especially critical to our winter grazing and during times of drought. It limits flexability for us to move livestock off habitat areas that vegetation is stressed and be able to use other areas to absorb grazing use until those habitat areas improve.

10c Increased traffic could cause some livestock to possibly be hit and this is a high expense to us.

0d Increased visitors and their dogs to the area due to the mine will also disturb livestock.

In addition to our public lands operation. We have concerns about our private lands. We own the Green Springs Ranch and Bullcreek Ranch plus several hundreds of acres of unfenced land outside of each of these ranches.

10e Concerns also on our private lands are the water for our springs and the increased number of people trespassing on our ranches, and the liability that goes with it.

10f We are the largest shareholder for the Big Warm Springs and tributaries of the Little Warm Spring – which irrigates our hay fields and pasture lands at Duckwater.

RESPONSES TO LETTER 10

10a Midway has received permits to use appropriated water for specific uses: mining, milling and domestic uses. Midway cannot use the appropriated water for other uses. The BLM has added text to sections 2.3, 3.2 and 4.2 of the EIS noting the permitted uses of the appropriated water (mining, milling and domestic uses).

The BLM would work with the permittee and Midway to develop range improvementprojects that could offset some sho term impacts.

10b Section 4.10.3 describes potential impacts to livestock and grazing resources, including loss of forage, restriction of acc to and distribution across land within the fenced mine area. Text refers to "sheep or cattle" in the fourth paragraph of Section 4.10.3, Proposed Action, Construction. To be clearer, the BLM added the word "sheep" to the first paragraph in Section 4.10.3 Proposed Action, Construction.

To minimize disruption of livestock herd movement and loss of access to forage, Midway has committed to shifting the mine area perimeter fence where feasible to maintain a technically safe and secure distance from the mine facilities (typically at least 1,000 feet between the mine facilities and the mine area fence). The BLM has added this commitment to Table 2.3-8 as an Applicant-Committed EPM.

10c The BLM added text to Section 4.10.3 Proposed Action, Construction to clarify that an increase in vehicle use on public roads could result in an increase in the frequency of vehicle-livestock collisions, resulting in an increase in direct impacts to livestock including animal mortality. Text was also added noting one of Midway's Applicant-Committe EPMs - posting and enforcing an appropriate speed limit to minimize the the risk of vehicle-livestock collisions. The BL added the measures of posting and enforcement of speed limits within the Plan area and installation of cattle guards to th range resources section of Table 2.3-8 as an Applicant-committed EPM and noted in the impact analysis in section 4.10.

Text was added to Section 4.18.3 noting that the direct impact of a loss of livestock through vehicle-livestock collision would have a direct economic impact. The BLM added text to Section 4.18.3 noting that Increased traff on roads in the project area could result in an increase in livestock mortality due to vehicular collisions with livestock, resulting in a direct economic impact of loss of livestock revenue.

10d The BLM added text to Section 4.10.3 noting that it is likely that as a result of access restrictions in some areas, recreational use of some other areas would increase, and that an increase in recreational visitors in these other areas duri the projected 10-year mining period could result in a proportionate increase in the number of dogs accompanying recreational visitors during that time, which could result in additional disturbances to livestock. The BLM also has adde text noting that currently hunting is the most common recreational use of the area. Hunting seasons vary but typically ar scheduled to occur between August and November, while most of grazing allotments on BLM land are permitted for use outside of the main hunting season.

The BLM has clarified Midway's Applicant-Committed EPMs (Table 2.3-8) noting that construction employees would instructed to avoid harassment and disturbance of wildlife, especially during the Greater Sage-Grouse breeding season (e.g., courtship and nesting) and prohibit the presence of pets on site during construction.

10e With regard to water resources including Green Springs, the text in Section 3.2 has been revised to incorporate informationrecently gathered on existing conditions. Text in Section 4.2.3 has been revised to include additional impact analysis based on this recently gathered information.

Based on this analysis, no impacts to springs in the area are anticipated. Midway has committed to conduct quarterly visual monitoring of Green Springs and Big Bull Spring from at least one year prior to mine construction until active leaching and/or milling stops at the mine, if permission for access can be obtained. If visual monitoring indicates reduced flows, the proponent would initiate discussions with the BLM and begin investigations into why the observed reduction in flow has occurred. If a Gold Rock Mine-caused reduction in flow is determined to have occurred, discussions with the BLM on mitigation would be immediately initiated. This commitment has been added to Table 2.3-8.

With regard to activities on private lands, activities associated with the proposed project would occur on BLM lands and would not occur on private lands. No direct impacts to private lands would occur. The BLM has added the following text to Section 4.15: "The increase in the number of people accessing the project area related to mining activity may impact security of private property and require additional effort on the part of land owners and the local sheriff to maintain public safety and the security of private property."

On page 4-7 of the EIS you discuss a cone of depression with a draw down of one foot. We do not see evidence of any current draw down tests for the Easy Junior Well and believe the draw down could have a large impact to all our private spring sources. We have not been approached regarding any monitoring for our springs. We would like this use monitored. If there is decrease to our private water sources due to the mine operation we would like mitigation for this loss. This could include monetary compensation and/or improvements to our private land. This could be coordinated between us, the mine and the State Water Engineer. However, we want the BLM to recognize this could impact our whole ranching & grazing operation. Please provide data from draw down tests as it is collected.

We would request that NO mine traffic (workers or heavy equipment) pass over the Green Springs Road. This road goes over the four springs that supply and carry the water for the Green Spring Ranch.

The tunnels where these four springs come out of the mountain were hand dug and lined with native pinyons and cedar over one hundred years ago. We feel excessive mine traffic over this road could cause these tunnels to cave in depleting our water source. We would like the BLM to recognize this concern and the impact it would have on our operation and the value of the private property.

Thank you for your consideration. Please contact us if you have any questions. Our address is: Duckwater Road #1, Duckwater, NV 89314. Our phone number is 775-863-0206.

Signed:

Alan L. Forsgren
Alan L. Forsgren

Edna Jean Forsgren
Edna Jean Forsgren
Halstead Forsgren Ranches, Inc.
DBA Duckwater Cattle Co.

Cc: Jill A Moore
Chris Mayer

10f The text in Section 3.2, subsections Existing Conditions, Precipitation (now "Climate"), Surface Water, Groundwater, and Water Quality have been revised to incorporate recently gathered water resource information. Text in Section 4.2.3 has been revised to include additional impact analysis based on results of a pumping test performed in November 2014. Text has been added to Table 2.3-8 Applicant-Committed EPMs, indicating that Midway has committed to conduct quarterly visual monitoring of Green Springs and Big Bull Spring from at least one year prior to mine construction until active leaching and/or milling stops at the mine, if permission for access can be obtained. If visual monitoring indicates reduced flows, the proponent would initiate discussions with the BLM and begin investigations into why the observed reduction in flow has occurred. If a Gold Rock Mine-caused reduction in flow is determined to have occurred, discussions with the BLM on mitigation would be immediately initiated.

10g Figure 1.1-2 shows the proposed main access route, which includes the segment of Green Springs Road between US 50 and BLM 1179/CR 1204, along with BLM 1179/CR 1204, and Easy Junior Road south to the Plan area. Under the Proposed Action, vehicles heading to the Gold Rock Mine would turn off of Green Springs Road onto BLM 1179/CR 1204. No Gold Rock mine-related traffic is anticipated to travel farther south on Green Springs Road past this intersection, which is approximately 9.2 miles north of Green Springs. No mine-related traffic impacts to the tunnels at Green Springs are anticipated.

The BLM's preferred alternative includes the Northwest Main Access Route Alternative, Southern Power Line Route; the Modified County Road Re-Route; and the Western TSF alternative. This preferred alternative would involve direction of mine-related traffic to use a route that would include the existing Pan Mine access road to reach the Plan area from the northwest, rather than using the northern portion of Green Springs Road, BLM 1179/CR 1204, and a portion of Easy Junior Road to reach the Plan area.

Gold Rock Project

NATIONAL SYSTEM OF PUBLIC LANDS

Draft Environmental Impact Statement
Comment Form

LETTER 11

U.S. Department of the Interior
Bureau of Land Management
Ely District Office

Comments must be received at the Bureau of Land Management Ely District Office by March 30, 2015.

Information available at: http://on.doi.gov/1DDx6by

Jeffrey Willes
NAME

664 19th Street East
ADDRESS

~~East~~ Ely NV 89301
CITY STATE ZIP

Organization (*if applicable*)

Add to Mailing list ☐ Yes ☐ No

Withhold personal information* ☐ Yes ☐ No

Receive notification of FEIS Availability? ☐ Yes ☐ No

Receive FEIS as:

CD? ☑ ~~Yes~~ ☐ No

Bound paper copy? ☐ Yes ☐ No

Comments:

I am in favor of this project as it appears the
11 potential benefit to the communities and economic
value would surpass any potential environmental Impact.

Send Handwritten or Typed Comments to:

BLM Ely District Office | Attn: Dan Netcher | HC 33 Box 33500 | Ely, NV 89301

Faxed comments should be sent to (775) 289-1910

Online comments should be submitted through the BLM's on-line ePlanning system: http://on.doi.gov/1zAxyW9

**Copies of comments will be available for public review at the local BLM office during regular business hours. Individuals requesting their personal information be withheld from public review or from disclosure under the Freedom of Information Act must check "YES" in the appropriate box. Such requests will be honored to the extent allowed by law.*

RESPONSES TO LETTER 11

11 Thank you for your comment.

1.3. GR-1-29011

Table 1.9. Name and Address

Name	[redacted]
Address 1	
Address 2	
Address 3	
City	Enterprise
State	Oregon
Zip	97828
Country	United States
Day Phone	
Evening Phone	
Other Phone	
Fax Number	
Email	[redacted]
[redacted]	
Agency	
Organization	
Position	

Table 1.10. Other Details

Submission Status	ACTIVE
Delivery Type	Front Offic Submission Form

Table 1.11. Comments

ID	1
Title	More Jobs is Always good for Nevada
Text	I think more Jobs for Nevada is always a great thing. If done properly this Gold Mine will mean More work for Nevadans! I am all for it. Thanks for the work you do BLM!

12

Table 1.12. Disclaimers / Agreements

Withhold personally identifying information from future publications on this project?	Y
Please include me on the mailing list for this project?	N

RESPONSES TO LETTER 12

12 Thank you for your comment.

Gold Rock Project

NATIONAL SYSTEM OF PUBLIC LANDS

Draft Environmental Impact Statement
Comment Form

LETTER 13

U.S. Department of the Interior
Bureau of Land Management
Ely District Office

Comments must be received at the Bureau of Land Management Ely District Office by March 30, 2015.

Information available at: http://on.doi.gov/1DDx6by

KEVIN BROWN
NAME

P.O. BOX 150765
ADDRESS

ELY NV 89315
CITY STATE ZIP

Organization (*if applicable*)

Add to Mailing list ☑ Yes ☐ No

Withhold personal information* ☐ Yes ☑ No

Receive notification of FEIS Availability? ☑ Yes ☐ No

Receive FEIS as
- CD? ☑ Yes ☐ No
- Bound paper copy? ☑ Yes ☐ No

Comments:

THE POSITIVE SOCIAL & ECONOMIC IMPACTS OF THE PROJECT CLEARLY OUTWEIGH ALL OTHER IMPACTS.

I SUPPORT USE OF THE NORTHWEST MAIN ACCESS ROUTE
3 ALTERNATIVE (SOUTHERN POWER LINE ROUTE).
I SUPPORT THE PAN MINE SOUTHWEST POWER LINE ROUTE.
I SUPPORT THE WESTERN TAILINGS STORAGE FACILITY ALTERNATIVE.
I SUPPORT THE MODIFIED COUNTY ROAD RE-ROUTE ALTERNATIVE.

MIDWAY HAS DONE AN EXCELLENT JOB OF CONSIDERING THE BEST ALTERNATIVES TO ~~MINIMIZE~~ MINIMIZE IMPACTS AND SHOULD BE ALLOWED TO PROCEED.

SINCERELY, KEVIN BROWN

10 MAR 2015

Send Handwritten or Typed Comments to:

BLM Ely District Office | Attn: Dan Netcher | HC 33 Box 33500 | Ely, NV 89301

Faxed comments should be sent to (775) 289-1910

Online comments should be submitted through the BLM's on-line ePlanning system: http://on.doi.gov/1zAxyW9

**Copies of comments will be available for public review at the local BLM office during regular business hours. Individuals requesting their personal information be withheld from public review or from disclosure under the Freedom of Information Act must check "YES" in the appropriate box. Such requests will be honored to the extent allowed by law.*

RESPONSES TO LETTER 13

13 Thank you for your comment. Your recommendations were taken into consideration during development of a preferred alternative. The BLM's preferred alternative includes the Northwest Main Access Route Alternative, Southern Power Line Route; the Modified County Road Re-Route; and the Western TSF alternative.

1.4. GR-1-29461

Table 1.13. Name and Address

Name	Mr. Thomas M Clayton
Address 1	PO Box 150573
Address 2	3200 West Gleason Creek Dr
Address 3	
City	Ely
State	Nevada

Zip	89315
Country	United States
Day Phone	
Evening Phone	
Other Phone	775-293-7249

Table 1.14. Other Details

Submission Status	ACTIVE
Delivery Type	Front Offic Submission Form

Table 1.15. Comments

ID	1
Title	Old Easy Junior Mine
Text	I worked for Alta Gold at the Easy Junior Mine during the 90s and had a very positive experience. The site is so remote that seldom did I see anyone on the roads other than mine employees. There is good and plentiful water nearby and the wildlife didn't seem to mind the operation at all. We had to use generator power all the time since there wasn't any power lines close enough to tap into. I was told at the time that if the price of gold went to about $400 per ounce that there was another good deposit to the south of the pit that they could go after. Time ran out for Alta Gold and the deposit never was mined. If I wasn't retired I would like to work out there again. This project will provide many local people with needed jobs at good wages and a boost to the local economy for years to come. No negatives. Thanks!

14

Table 1.16. Disclaimers / Agreements

Withhold personally identifying information from future publications on this project?	N
Please include me on the mailing list for this project?	Y

RESPONSES TO LETTER 14

14 Thank you for your comment.

1.1. GR-1-28861

Table 1.1. Name and Address

Name	[redacted]
Address 1	995 Pemberton Dr
Address 2	
Address 3	
City	Spring Creek
State	Nevada
Zip	89815
Country	United States
Day Phone	
Evening Phone	[redacted]
Other Phone	
Fax Number	
Email	
Name	[redacted]
Agency	
Organization	
Position	

Table 1.2. Other Details

Submission Status	ACTIVE
Delivery Type	Front Offic Submission Form

Table 1.3. Comments

ID	1
Title	Support for Gold Rock Mine
Text	Support for Gold Rock Mine Project
Attachment	Gold Rock EIS Letter.pdf

15

Table 1.4. Disclaimers / Agreements

Withhold personally identifying information from future publications on this project?	Y
Please include me on the mailing list for this project?	Y

RESPONSES TO LETTER 15

15 Thank you for your comment.

February 14, 2015

Mr. Dan Netcher
BLM Ely District Office
HC 33 Box 33500
Ely, NV 89301

Re: Gold Rock Project EIS

Dear Mr. Netcher:

This letter is in support of Midway Gold Corp.'s Gold Rock Project. I believe this project is important to northeastern Nevada for a number of reasons. The mine will bring a large number of high-paying construction and mining jobs to the area, which has suffered economic fluctuations. These added jobs will be multiplied as support industries either move into the area or expand their workforce in nearby communities. Northeastern Nevada has a skilled mining workforce and educational support system in Great Basin College that can segue into new operations as the older operations begin to close.

Midway has recognized and taken advantage of the proximity of the proposed Gold Rock Mine to the Pan Mine, which adds synergy by being able to utilize common resources such as the power line.

The proposed Gold Rock Mine is partially a Brownfields project as it encompasses the closed and reclaimed Easy Junior Mine. This mine was only partially reclaimed under the Western Region Restoration of Abandoned Mine Sites program. The proposed Gold Rock Mine will remove the Easy Junior spent heap, recycle growth media and the clay underliner where possible, and place the spent material in a higher level of containment to modern standards. Midway will post a reclamation bond that will ensure the proposed disturbance will be closed and reclaimed to modern standards for productive post-mining land uses. These proposed activities allow scare resources to be re-used and provide a model for future mines.

Thank you for the opportunity to comment.

Sincerely,

[redacted]

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LETTER 16

Gold Rock Project

NATIONAL SYSTEM OF PUBLIC LANDS

Bureau of Land Management
MAR
RECE
Ely, NV

Draft Environmental Impact Statement
Comment Form

U.S. Department of the Interior
Bureau of Land Management
Ely District Office

Comments must be received at the Bureau of Land Management Ely District Office by March 30, 2015.

Information available at: http://on.doi.gov/1DDx6by

[redacted]
NAME

[redacted]
ADDRESS

LAS VEGAS NV 89110
CITY STATE ZIP

Organization (*if applicable*)

Add to Mailing list	☒ Yes ☐ No
Withhold personal information*	☒ Yes ☐ No
Receive notification of FEIS Availability?	☒ Yes ☐ No
Receive FEIS as:	
CD?	☐ Yes ☐ No
Bound paper copy?	☒ Yes ☐ No

Comments: Please keep sending me all information as previously requested

16

Send Handwritten or Typed Comments to:

BLM Ely District Office | Attn: Dan Netcher | HC 33 Box 33500 | Ely, NV 89301

Faxed comments should be sent to (775) 289-1910

Online comments should be submitted through the BLM's on-line ePlanning system: http://on.doi.gov/1zAxyW9

**Copies of comments will be available for public review at the local BLM office during regular business hours. Individuals requesting their personal information be withheld from public review or from disclosure under the Freedom of Information Act must check "YES" in the appropriate box. Such requests will be honored to the extent allowed by law.*

RESPONSES TO LETTER 16

16 Thank you for your comment.

1.1. GR-1-28862

Table 1.1. Name and Address

Name	[redacted]
Address 1	[redacted]
Address 2	
Address 3	
City	reno
State	Nevada
Zip	89504
Country	United States
Day Phone	
Evening Phone	
Other Phone	
[redacted]	[redacted]
Organization	
Position	

Table 1.2. Other Details

Submission Status	ACTIVE
Delivery Type	Front Offic Submission Form

Table 1.3. Comments

ID	I
Title	Gold Rock
Text	To whom it may concern: I wanted to take a brief moment to comment on the Gold Rock opportunity that Midway Gold has presented. I think our community needs a project of this magnitude to help our neighbors and friends. As long as the company adhears to the federal guidelines (and state ones too), I see no problem with the project as a Nevadan. I look forward to seeing the high paying jobs come into our rural communites and financially help our community. Thanks-[redacted]

17

Table 1.4. Disclaimers / Agreements

Withhold personally identifying information from future publications on this project?	Y
Please include me on the mailing list for this project?	Y

RESPONSES TO LETTER 17

17 Thank you for your comment.

Gold Rock Project

LETTER 18

NATIONAL SYSTEM OF PUBLIC LANDS

Draft Environmental Impact Statement
Comment Form

U.S. Department of the Interior
Bureau of Land Management
Ely District Office

Bureau of Land Management
MAR 26 2015
RECEIVED
Ely, NV

Comments must be received at the Bureau of Land Management Ely District Office by March 30, 2015.

Information available at: http://on.doi.gov/1DDx6by

David Little (Little Paris Sheep Company)
NAME

Hc 30 Box 346
ADDRESS

Jiggs NV 89815
CITY STATE ZIP

Organization (*if applicable*)

Add to Mailing list ☐ Yes ☐ No

Withhold personal information* ☐ Yes ☐ No

Receive notification of FEIS Availability? ☐ Yes ☐ No

Receive FEIS as:

CD? ☐ Yes ☐ No

Bound paper copy? ☐ Yes ☐ No

Comments: Attached

Send Handwritten or Typed Comments to:

BLM Ely District Office | Attn: Dan Netcher | HC 33 Box 33500 | Ely, NV 89301

Faxed comments should be sent to (775) 289-1910

Online comments should be submitted through the BLM's on-line ePlanning system: http://on.doi.gov/1zAxyW9

**Copies of comments will be available for public review at the local BLM office during regular business hours. Individuals requesting their personal information be withheld from public review or from disclosure under the Freedom of Information Act must check "YES" in the appropriate box. Such requests will be honored to the extent allowed by law.*

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LITTLE PARIS SHEEP COMPANY

HC 30 Box 346
Jiggs, Nevada 89815

HM 775-744-4303
Cell 775-934-8860
littlelivestock@gmail.com

March 17, 2015
Dan Netcher
BLM Ely District Office
HC 33 Box 33500
Ely, Nevada 89301

Dear Mr. Netcher,

Concerning the Gold Rock Mine Project I would first like to state that out of the proposals I prefer the proposed action detailed on page 2-4 in the Environmental Impact Statement, Vol. 1. The reason I prefer this proposal is because I feel I can better work with you on maneuvering my herds around this one then the other designs. However, I need to strongly request that the west portion of the fencing be pulled back as tightly as possible to allow room for my herds to migrate through. The way I understand it, this should be possible since the proposed project will be fencing in 8,757 acres and utilizing approximately 3,500 of those acres.

18a

The 8,757 acres that the proposal would be fencing in is, for me, a rich grazing area. I graze this area every year. The current proposal substantially impedes my herds' progression from allotment to allotment. The mine is planning on taking up a large majority of the area where my herds graze through as they migrate from the South Pancake allotment to the Duckwater allotment [and vice versa]. It is imperative that we have more space to migrate through then what the Gold Rock Mine Project is proposing. Right now, the proposed action will put a hardship on my operation because the design greatly disrupts my herds' ability to progress and runs us too tightly between the west fence and cedar trees. The area that the mine proposes to fence is an area that we use to spread out, simultaneously, and graze three separate bands of sheep through as we stage our operation for the shearing process. The mine proposal greatly affects our strategic ability to prepare our sheep for shearing which takes place just north of the proposed mine site at the South Pancake well.

18b

Thank you for considering my comments and working to make the best possible decision for all parties involved.

Sincerely,

David Little; Little Paris Sheep Company

David Little

RESPONSES TO LETTER 18

18a To address this comment and comment 22ab, the BLM has added text in Table 2.3-8 noting that Midwa would maintain a technically safe and secure distance, typically 1,000 feet, between the mine facilities a d the mine area fence. However, wherever feasible while maintaining public safety, Midway would shift he fence line to allow more room for livestock herds to move freely past the mine.

18b Please see response to comment 18a.

Little Paris Sheep company
Proposed fence

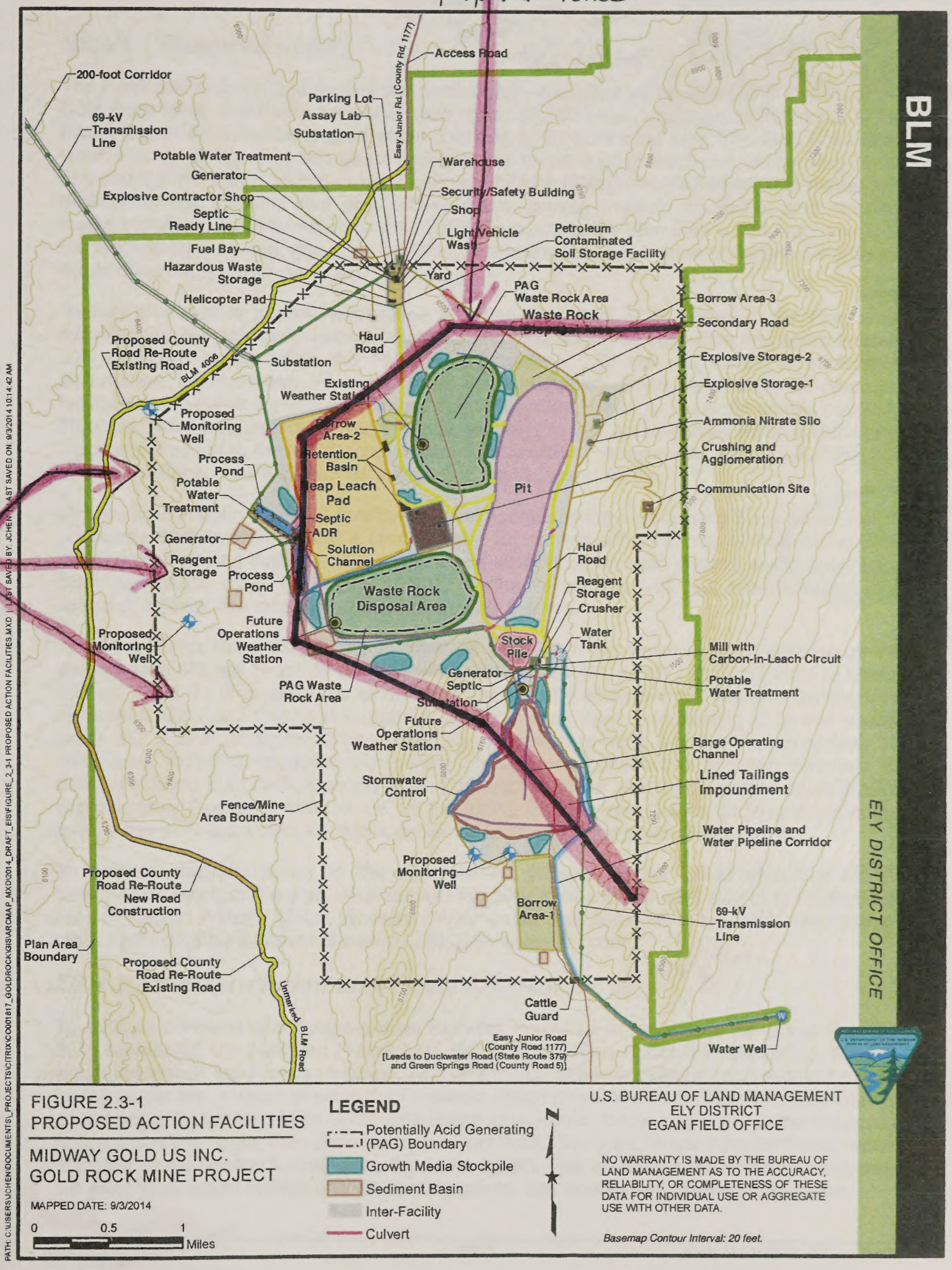

FIGURE 2.3-1
PROPOSED ACTION FACILITIES

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 9/3/2014

0 0.5 1 Miles

LEGEND

- Potentially Acid Generating (PAG) Boundary
- Growth Media Stockpile
- Sediment Basin
- Inter-Facility
- Culvert

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.

Basemap Contour Interval: 20 feet.

PATH: C:\USERS\JCHEN\DOCUMENTS_PROJECTS\CITRIX\CO001817_GOLDROCK\GIS\ARCMAP_MXD\2014_DRAFT_EIS\FIGURE_2_3-1 PROPOSED ACTION FACILITIES.MXD | LAST SAVED BY: JCHEN | LAST SAVED ON: 9/3/2014 10:14:42 AM

These pictures are very important to us and our operation.

18 cont.

RESPONSES TO LETTER 18 *cont.*

18c Please see response to comment 18a.

dfletcher@blm.gov

P.S. - I have not checked either Option 1 or 2 out yet in the field. I will try to get out to see 1 & 2 next week.

3/20/15 mmp

ES.4.1 Proposed Action

The Proposed Action would include the construction, operation, reclamation, and closure of the Gold Rock Mine. The Plan area would encompass 18,745 acres, and major components of the mining operation would be located within a fenced 8,757-acre mine area. The Gold Rock Mine would include an open pit, two waste rock disposal areas, a heap leach pad, processing ponds and plant, a mill with a carbon-in-leach circuit, a tailings storage facility, water supply wells and delivery/storage system, haul and access roads, growth medium stockpiles, and ancillary support facilities. Transformers and distribution lines within the Plan area would carry power to the processing plant, mill, and other facilities. Approximately 3,468 acres of surface disturbance would occur within the mine area.

Midway proposes to perform exploration activities on a total of 467 acres in the Plan area, including the 267 acres previously authorized under the amended 2011 Plan and approximately 200 additional acres within the Plan area boundary. Of the 467 acres of exploration disturbance, approximately 75 acres would be re-disturbed during construction of proposed facilities and reclaimed in accordance with the facility that covers it. To avoid double counting, 75 acres would be subtracted from the total, resulting in 392 acres of exploration disturbance, which when added to the 3,468 acres of disturbance within the mine area, would result in 3,860 acres of disturbance within the Plan area under the Proposed Action.

Midway would obtain water for construction and operations from the existing Easy Junior well. If necessary, Midway would install a second water supply well within 0.5 mile of the existing Easy Junior well. If drilling indicates that a well would provide water, then Midway would apply for a water well permit within the Railroad Valley Northern Part. The well pad, two-track road, and associated power line would disturb approximately 6 acres.

The Easy Junior Road extends south from US 50 through the Newark Valley, passing on the western side of Easy Ridge to connect with County Road 62, which leads southeast to Green Springs Road. To promote public safety and mine security, Midway would relocate the segment of Easy Junior Road that passes through the mine area west onto existing BLM and county roads and a short segment of new road. The proposed re-route would be approximately 12 miles long, including approximately 2 miles of new road construction and approximately 10 miles of existing BLM or BLM/county road. Construction of the new road segment would involve approximately 7 acres of disturbance. In the future, if White Pine County decides to widen the road, those activities would result in approximately 22 additional acres of disturbance.

19a

To provide electrical power to the mine, Mount Wheeler Power would extend a 69 kV transmission line from the Pan Mine across the valley to tie into the west side of the Gold Rock Project electric system. Mount Wheeler Power would also establish a two-track maintenance road. Approximately 51 acres of surface disturbance would occur.

19b

ES.4.2 Northern Power Line Route Alternative

To address concerns about sage-grouse from the Proposed Action due to the power line, the BLM considered the Northern Power Line Route Alternative. Under this alternative, Midway would implement the Proposed Action, with one modification—a different route would be used for the power line. Instead of using the Proposed Action power line route, Midway would tie in to a right angle on the Pan Mine Southwest Power Line Route, follow a segment of the Proposed Action power line route, then continue to the Gold Rock Plan area. Mount Wheeler Power would establish a new two-track road along the entire length. This alternative would be approximately 3.6 miles long, would include only two turning points, and would span relatively flat ground.

19c

19d

RESPONSES TO LETTER 19

19a Thank you for your comment. The Proposed Action is a description of the proposed project as presented in the Plan of Operations (Midway 2013a) that Midway submitted to the BLM. Section 2.3.3 of the EIS describes the Proposed Action power line route. As part of the NEPA process, the BLM developed alternatives to the Proposed Action. Section 2.4.1 of the EIS describes the power line route alternatives. The BLM performed an impact analysis of these alternatives.

No changes have been made to the definition or description of the alternatives. The BLM considered the results of the impact analysis, along with input from public comments, in developing a preferred alternative. The BLM's preferred alternative includes the Northwest Main Access Route Alternative, Southern Power Line Route; the Modified County Road Re-Route; and the Western TSF alternative.

19b Please see response to comment 19a.

19c Thank you for your comment. Section 2.4.1 describes the power line route alternatives.

19d Thank you for your comment. Distances for proposed alternatives were measured using publicly available geographic mapping layers such as TIGER, along with BLM road mapping layers, Midway project design layers, and third party contractor proposed alternative design layers.

ES.4.3 Southern Power Line Route Alternative

To address concerns about sage-grouse from the Proposed Action due to the power line, the BLM considered the Southern Power Line Route Alternative. Under this alternative, Midway would implement the Proposed Action with one modification—a different route would be used for the power line. Instead of using the Proposed Action power line route, Midway would tie in to a right angle on the Pan Mine Southwest Power Line Alternative and extend south and east, roughly paralleling existing BLM 4106/County Road 1180 and BLM 4006, then entering the Plan area. This alternative would be approximately 4.0 miles long. Mount Wheeler Power would use the existing roads to access the power line; however, if existing roads do not provide sufficient access to the power line, Mount Wheeler Power would establish segments of new two-track road where appropriate.

19e

ES.4.4 Northwest Main Access Route Alternative, Northern Power Line Route

Under this alternative, Midway would implement the Proposed Action with one modification—a different main access route would be used. Instead of using Green Springs Road as the main access route for commercial truck traffic and employees traveling from US 50, mine-bound commercial truck and employee traffic from US 50 would be directed to follow the Pan Mine access road to reach the existing Easy Junior Road and the main entrance to the Gold Rock Mine. If this alternative were selected, the Northern Power Line Route Alternative maintenance road would be widened and incorporated into the access route. This alternative main access route from US 50 to the Gold Rock Mine parking lot would be approximately 17.4 miles long, compared to the 18.4-mile-long existing main access route. The road would have a minimum of a 32-foot running surface, a central crown, and ditches for controlling surface water runoff, for a total road width of approximately 66 feet in accordance with appropriate standards.

Segments of the existing Pan Mine access road and Easy Junior Road, both of which already support commercial truck traffic, would make up part of the alternative main access route. These segments would not require upgrading. Segments of existing or approved two-track roads, including the Pan Mine Southwest Power Line Route maintenance road and BLM 4006, would be widened and upgraded. Proposed segments, including the connector road from the Pan access road to the Southwest Power Line maintenance road and the Northern Power Line Route maintenance road, would be constructed to support commercial truck traffic.

19f

ES.4.5 Northwest Main Access Route Alternative, Southern Power Line Route

Under this alternative, Midway would implement the Proposed Action with one modification—a different main access route would be used. Instead of using Green Springs Road, mine-bound commercial truck and employee traffic from US 50 would be directed to follow the Pan Mine access road to reach the existing Easy Junior Road and the main entrance to the Gold Rock Mine. If this alternative were selected, the Southern Power Line Route Alternative maintenance road, which may include segments of existing roads, would be widened and incorporated into the access route. This alternative main access route from US 50 to the Gold Rock Mine parking lot would be approximately 18.3 miles long, compared to the 18.4-mile-long existing main access route. The road would have a minimum of a 32-foot running surface, a central crown, and ditches for controlling surface water runoff, for a total road width of approximately 66 feet in accordance with appropriate standards.

19e Please see response to comment 19d.

19f Section 2.4.1 describes the power line route alternatives, and Section 2.4.2 describes access route alternatives including the Northwest Main Access Route alternatives (which would use either the northern power line route or the southern power line route).

Segments of existing roads that already support commercial truck traffic would make up part of the alternative access route. Segments of existing or approved two-track roads, including segments of the Pan Mine Southwest Power Line Route maintenance road and BLM 4006, would be widened and upgraded. Proposed segments, including the connector road from the Pan access road to the Southwest Power Line maintenance road and the Southern Power Line Route maintenance road, would be constructed to support commercial truck traffic. 19g

ES.4.6 Modified County Road Re-Route Alternative

To minimize potential impacts due to surface disturbance in sage-grouse habitat during construction of a new road segment along the proposed county road re-route, and to maintain a through-route to Green Springs Road in compliance with U.S. Revised Statute 2477, the BLM considered the Modified County Road Re-Route Alternative. Under this alternative, Easy Junior Road would be re-routed around the mine area on existing roads instead of constructing a new road segment to connect BLM 4006 and BLM 4059. The length of the modification is approximately 5 miles. In combination with the existing BLM road segments on the proposed county road re-route, this alternative would be 13 miles long, which is approximately 1 mile longer than the Proposed Action county road re-route.

ES.4.7 Western Tailings Storage Facility Alternative 19h

Under this alternative, Midway would implement the Proposed Action with several modifications. To minimize effects to mule deer crucial winter range, Midway would construct the tailings storage facility and associated stormwater controls west of the heap leach pad and South Waste Rock Dump, instead of south of the pit and ore stockpile. This alternative location would require moving several facilities within the mine area, including mine roads, reclamation soil storage areas, secondary roads, sediment basins, stock piles, explosives storage facilities, storm water controls, the water pipeline, and monitoring wells. These changes would result in a more compact footprint with shorter roads and power and water corridors between these facilities. The water pipeline for the project would be slightly longer than that under the Proposed Action to extend it to the new mill location near the center of the mine site. To minimize effects to mule deer crucial winter range further, Midway would shift the eastern boundary of the mine area and associated fence line west. Midway also would avoid performing surface disturbing exploration activities in mule deer crucial winter range from November 1 to March 31.

The alternative tailings storage facility would be contained by a narrow dam between the small ridges, or "hogbacks," to the west, and supplemented by two smaller embankments to the south. It would cover about 403 acres, which is about 134 acres larger than the 269-acre Proposed Action tailings storage facility. However, the amount of borrow area needed for this alternative would be about 53 acres, which is 102 acres fewer than 155 acres of borrow area under the Proposed Action. Midway anticipates that most of the borrow material for the tailings storage facility embankments could be obtained from within the footprint of the alternative tailings storage facility location. About 20 acres of borrow area disturbance outside of the alternative tailings storage facility location may be needed. Assuming that most of the borrow material for the dams can be obtained from within the tailings storage facility footprint itself, disturbance within the mine area under this alternative would involve approximately 3,350 acres, which is about 118 fewer acres than mine area disturbance under the Proposed Action.

By moving the tailings storage facility west, it would no longer be a limiting physical feature for moving the perimeter fence west out of mule deer habitat, and the eastern fence line would be

RESPONSES TO LETTER 19 *cont.*

19g Please see response to comment 19d.

19h Please note that Section 2.4.2 describes the access route alternatives as opposed to power line route alternatives.

CHAPTER 1
INTRODUCTION

1.1 OVERVIEW

Midway Gold U.S. Inc. (Midway) submitted the *Gold Rock Project Plan of Operations and Reclamation Permit Application* (Plan) to the Bureau of Land Management (BLM) Ely District Egan Field Office (EFO) in March 2013 in compliance with Code of Federal Regulations (CFR) 43 CFR Subpart 3809. The Gold Rock Mine Project (the project) is located in White Pine County, Nevada on the east side of the Pancake Range approximately 50 miles west of Ely, 30 miles southeast of Eureka, and 15 miles south of U.S. Highway 50 (US 50) (Figure 1.1-1). The proposed project is located within all or portions of the following sections of the Public Land Survey System (PLSS), Mount Diablo Baseline and Meridian (MDBM):

- Township 15 North, Range 55 East, sections 1, 13, and 24
- Township 15 North, Range 56 East, sections 2 through 10, 15 through 22, and 27 through 35;
- Township 16 North, Range 55 East, sections 2, 11, 14, 23, 26, 35, and 36;
- Township 16 North, Range 56 East, sections 22, 23, 25, 26, 27, 28, 29, and 31 through 35; and
- Township 17 North, Range 55 East, sections 22, 27, 34, and 35.

The Plan area would encompass 18,745 acres. Approximately 8,757 acres within the Plan area would be fenced to preclude access by the public, wild horses, and livestock. Mining activities would occur within this fenced area (mine area) in all or portions of Township 15 North, Range 56 East, sections 3 through 10, 15 through 22, and 27 through 29 (Figure 1.1-2). Exploration activities would occur anywhere within the Plan area.

This *Draft Environmental Impact Statement of the Gold Rock Mine Project* (DEIS) was prepared in compliance with the National Environmental Policy Act of 1969 (NEPA); the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR 1500 – 1508); and in accordance with the BLM NEPA Handbook H-1790-1 (BLM 2008a), applicable instruction memoranda, and other applicable laws and regulations. All baseline data reports and other information used in preparation of this DEIS are included in the Project Record and are available for review at the BLM EFO.

Chapter 1 explains the Purpose of and Need for the Proposed Action, lists the issues evaluated in the DEIS, and provides other introductory information. Chapter 2 describes the Proposed Action and alternatives including the No Action Alternative and other Action Alternatives. Chapter 3 describes the affected environment, and Chapter 4 documents the environmental consequences of the Proposed Action and each alternative, including measures that would mitigate adverse effects. Cumulative effects are described in Chapter 5. Chapter 6 provides the consultation and coordination information used for the preparation of this document. Chapter 7 provides the references, glossary, and index. This DEIS discloses the environmental consequences of implementing the Proposed Action and alternatives.

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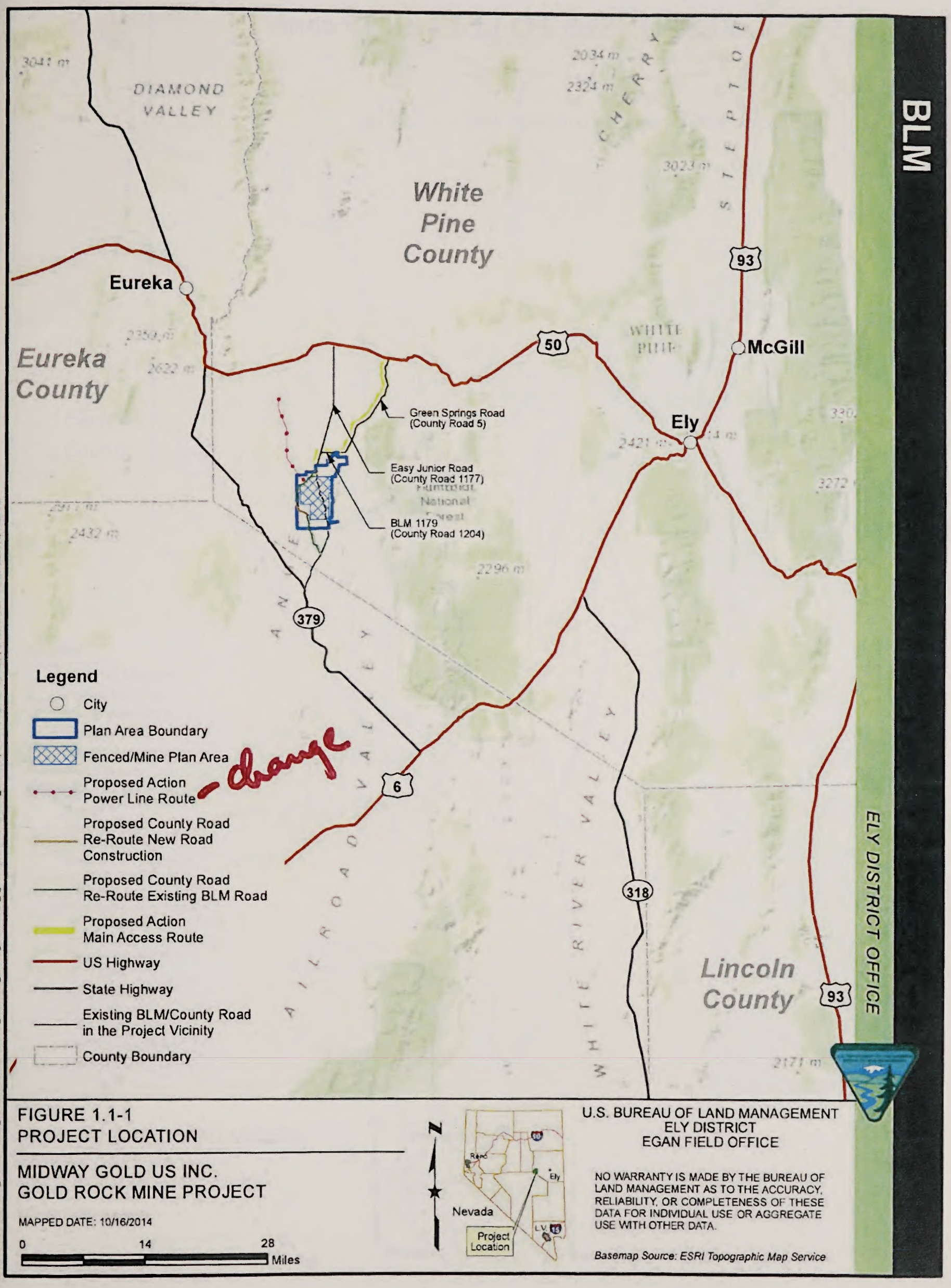

FIGURE 1.1-1
PROJECT LOCATION

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 10/16/2014

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.

Basemap Source: ESRI Topographic Map Service

PATH Z:\GIS\PROJECTS_ENV\C0001817_GOLDROCK\GIS\ARCMAP_MXD\2014_DRAFT_EIS\FIGURE_1_1-1 PROJECT LOCATION_V3.MXD | LAST SAVED BY JCHEN | LAST SAVED ON 10/16/2014 2:44:27 PM

RESPONSES TO LETTER 19 *cont.*

19i Please see response to comment 19a.

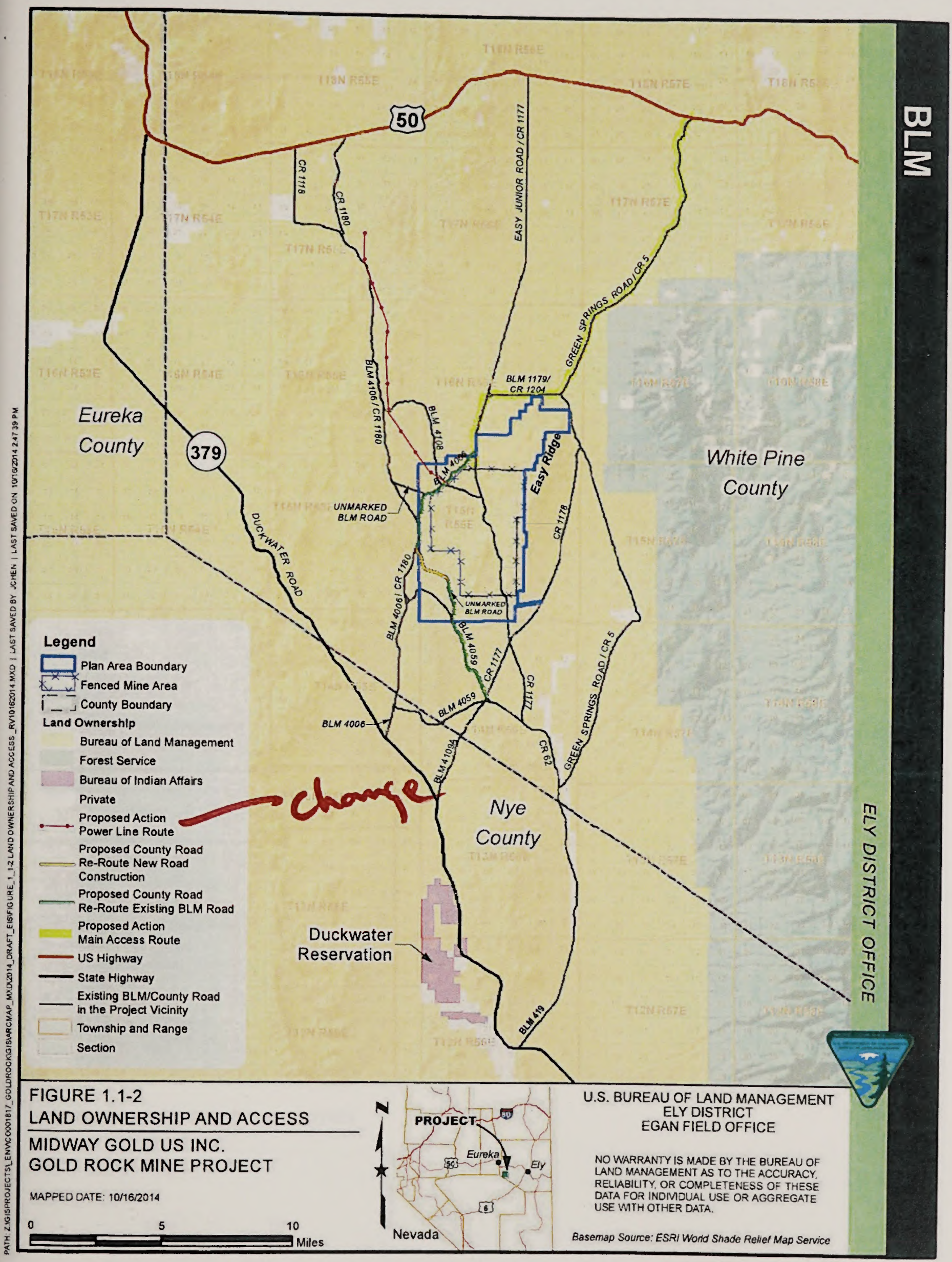

FIGURE 1.1-2
LAND OWNERSHIP AND ACCESS

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 10/16/2014

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.

Basemap Source: ESRI World Shade Relief Map Service

PATH: Z:\GIS\PROJECTS_ENVC0001617_GOLDROCK\GIS\MAP_MXD\2014_DRAFT_EIS\FIGURE_1_1-2 LAND OWNERSHIP AND ACCESS_RV10162014.MXD | LAST SAVED ON 10/16/2014 2:47:39 PM | LAST SAVED BY JCHEN

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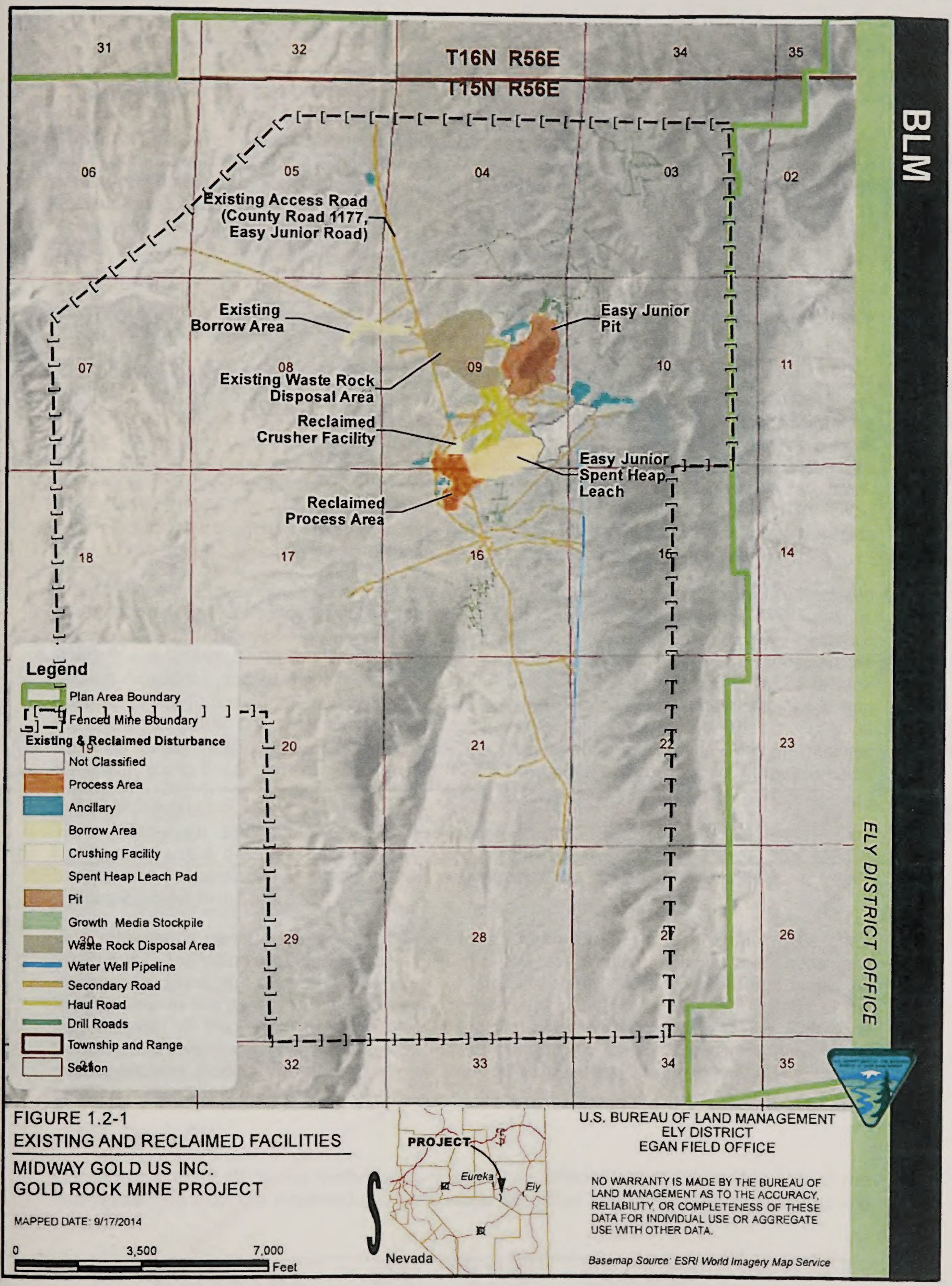

FIGURE 1.2-1
EXISTING AND RECLAIMED FACILITIES

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 9/17/2014

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.

Basemap Source: ESRI World Imagery Map Service

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2.3.3 Power Line

Under the Proposed Action, Midway would obtain its power from the Mount Wheeler Power 69 kV transmission line that will supply the Pan Mine. The Proposed Action power line would be extended from the Pan Mine across the valley to tie into the western side of the Gold Rock Mine electric system as shown on Figure 1.1-2. The power line alignment would be approximately 11 miles long. Temporary generators may be needed during construction or initial operations (Williams 2013a). Midway would comply with applicable permit requirements.

Following the BLM's designation of the Southwest Power Line Alternative as the preferred alternative for the Pan Mine, Midway modified the Proposed Action power line alignment slightly at the northern end to avoid more greater sage-grouse habitat (Midway 2013a).

The power line from the Pan Mine to the Gold Rock Mine would consist of three conductors and one static line supported with monopole structures (Figure 2.3-3) approximately 43 to 48 feet high. Mount Wheeler would install perch deterrents approved by the BLM in areas where the power line would cross or be within 1,968 feet (600 meters) of greater sage-grouse habitat. Power lines and associated structures would be constructed to conform to the practices and standards described in the Suggested Practices for Raptor Avian Protection on Power Lines–The State of the Art in 2006 (Avian Power Line Interaction Committee 2006) and Reducing Avian Collisions with Power Lines-The State of the Art in 2012 (APLIC 2012). These standards prevent electrocution through proper spacing between overhead transmission line features.

Mount Wheeler Power would determine the exact locations of the power poles and associated maintenance road during construction, based on field conditions and technical requirements. After final siting of the power line and maintenance road in the field, a 60-foot-wide corridor would be established. Power line poles would be installed approximately 300 feet apart, as ground conditions and design requirements would allow. Surface disturbance would include clearing of vegetation during installation of the poles, and clearing of vegetation associated with the two-track power line maintenance road along the length of the route). Blasting may be required during installation of the power poles or maintenance road, depending on geologic conditions along the alignment. Construction of this power line and an associated maintenance road would disturb approximately 51 acres (Table 2.3-1, Figure 1.1-2).

19l Three step-down transformers would be located in the Plan area (Figure 2.3-1). One transformer would distribute power to the process plant and support buildings. The second transformer would distribute power to the crushing facilities, and the third transformer would distribute power to the mill and TSF.

19k

One emergency generator would be located at the heap facility process plant, and another emergency generator would be located at the mill to maintain solution circulation and emergency operations support in the event of temporary power loss. Fuel storage would be located next to the generators in secondary containment with 110 percent containment of the largest tank. If the proposed power line connecting the Gold Rock Mine to the Pan Mine Southwest Power Line is not completed in time for project startup, temporary generators, associated fuel storage and secondary containment facilities may be used at these locations until the power line is operational.

2.3.4 Open Pit

Conventional open pit mining methods (truck and shovel/loader) would be used to extract ore and waste rock from the proposed pit. Rock would be drilled and blasted for excavation using

19l *cont.*

19j Thank you for your comment. Please see response to comment 19a.

19k The text in sections 2.3.3 and 4.9.3 and in Table 2.3-8 has been modified to reflect suggested edits in this comment and NDOW comment 1p, using the following or similar language:

"APLIC **construction or best available technology** to deter perching raptors".

19l The text has been revised per the comment.

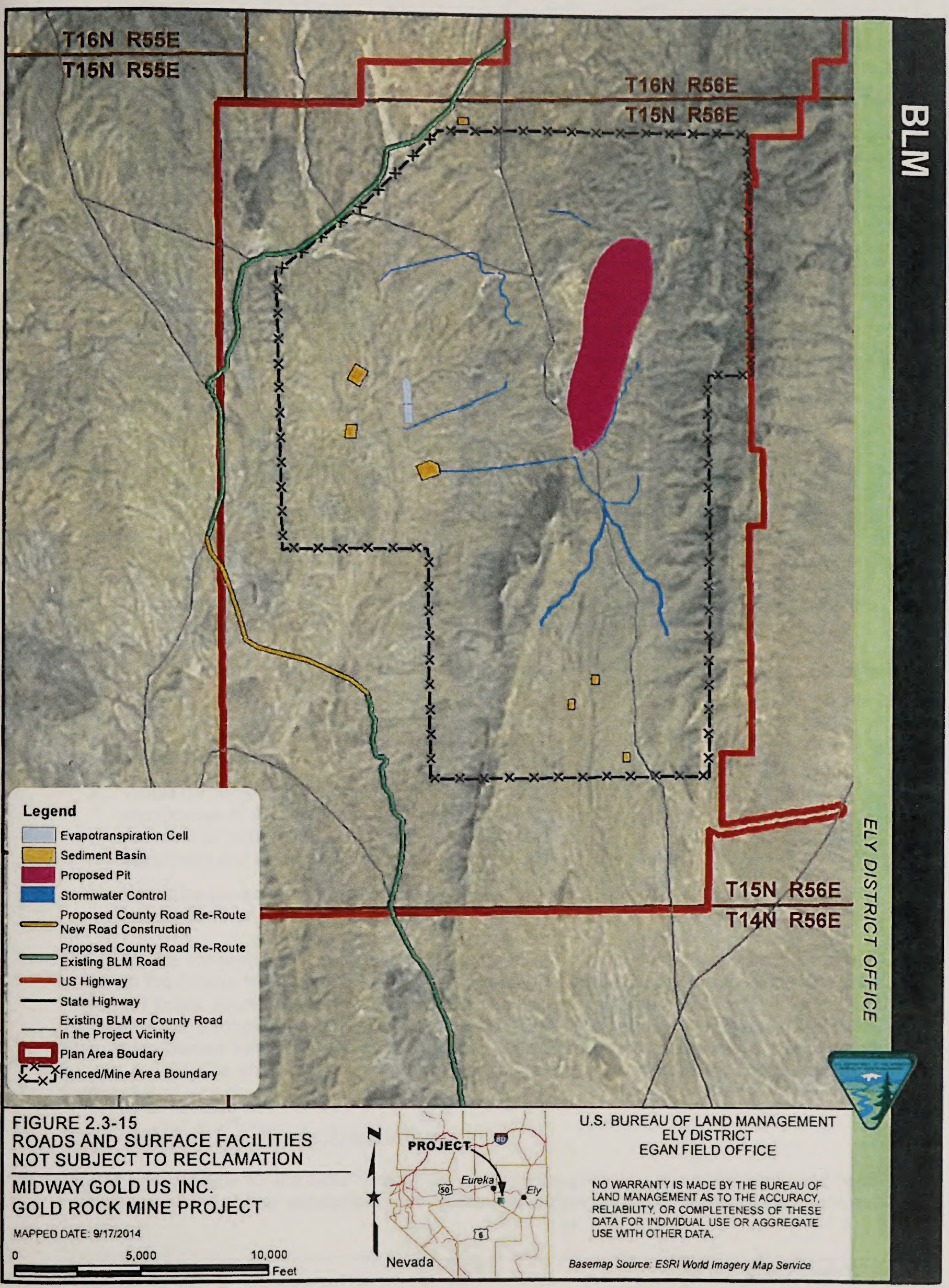

FIGURE 2.3-15
ROADS AND SURFACE FACILITIES
NOT SUBJECT TO RECLAMATION

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 9/17/2014

U.S. BUREAU OF LAND MANAGEMENT
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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.

Basemap Source: ESRI World Imagery Map Service

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Table 2.3-8 Applicant-Committed Environmental Protection Measures By Resource for Proposed Action

Resource	Potential Effects	Actions to Minimize or Avoid Effects
	mine site accidents	• Clean up spills in accordance with NDEP guidelines. • Restrict public access locally during active mining.

Notes:
1 USFWS Threatened, Endangered, Candidate, and Proposed Species; State Protected Species; BLM Sensitive Species
2 Romin and Muck recommend "beginning land use, human activities, or construction prior to the breeding season will allow a pair of raptors to "choose" whether the nest site is still acceptable considering the disturbance. Warning sirens at regular intervals have also been used to alert raptor pairs to potentially startling noises such as blasting. This technique has generally been used where there is no acceptable alternative to the proposed action. While loss of the nest site may occur. The goal of this technique is to avoid loss of eggs or young and allow the adults an opportunity to select an alternate nesting site." If activities such as blasting were to begin during early spring and summer, birds potentially nesting in proximity to the project area would either become habituated to the disturbance or seek another location. Pre-disturbance signals such as sounding sirens prior to blasting may be effective in limiting negative raptor responses blasting. As sounding sirens prior to a blast is a standard safety practice at most mine sites, this technique would be implemented to reduce impacts.
PAG = Potentially Acid Generating
USFWS = United States Fish and Wildlife Service

2.4 ALTERNATIVES

The CEQ policy regulation (40 CFR 1500.2(e)) 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." The CEQ NEPA and agency planning regulation (40 CFR 1501.2(c)) 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 alternative 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.

The BLM, the cooperating agencies, and the third-party EIS contractor developed alternatives based on the criteria for reasonable alternatives, through internal scoping discussions, and with input from public scoping comments. The BLM considered each alternative and either carried the alternative through detailed evaluation in the EIS or eliminated the alternative. The alternatives carried forward are described below. The alternatives considered but not carried forward for detailed analysis, along with any related reasons for elimination, are described in Section 2.5.

2.4.1 Power Line Route Alternatives

The Proposed Action for the Gold Rock Mine, including the proposed power line route and tie-in to the nearby Pan Mine substation, was developed before the BLM selected the preferred

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alternative for the Pan Mine EIS. In November 2013, the BLM selected the Southwest Power Line Alternative as the preferred alternative for the Pan Mine Project, and in December 2013, the BLM issued the ROD on the Pan Mine EIS.

As a result of the BLM's decision to select the Southwest Power Line Alternative for the Pan Mine EIS, the starting point for the Gold Rock Mine Project power line could be moved farther south, and the length of the associated power line could be shortened. Effects to resources could be reduced or eliminated. Consequently, the BLM considered two above-ground power line route alternatives that would tie into the Pan Southwest Power Line Route, described in Sections 2.4.1.1 and 2.4.1.2.

Under either of the proposed above-ground power line route alternatives, Mount Wheeler Power would use the same 69 kV mono-pole design suggested for the Proposed Action power line. Electrical control equipment would be mounted on the power poles where the Gold Rock Mine power line ties into the Pan Mine Southwest Power Line. Up to four poles would be required at the intersection depending on the angle of the power line and the need for guide line poles, No substation would be required at this intersection. Mount Wheeler Power would construct a two-track maintenance road within the selected power line corridor. If the Proposed Action is approved and implemented, staff from either mine could use the maintenance road associated with the selected power line route to access the other mine to perform environmental monitoring.

Northern Power Line Route Alternative

- Nope

19m

To address concerns about greater sage-grouse from the Proposed Action due to the power line, the BLM considered the Northern Power Line Route Alternative. Under this alternative, Midway would implement the Proposed Action described in Section 2.3, with one modification: a different power line route would be used.

Instead of using the Proposed Action power line route, Midway would tie in to a right angle on the Pan Mine Southwest Power Line Route, follow a segment of the Proposed Action power line route, then continue to the Gold Rock Plan area (Figure 2.4-1). This alternative would be approximately 3.6 miles long.

The Northern Power Line Route Alternative incorporates a segment of the Proposed Action, and was identified by Mount Wheeler Power as the most suitable route for power line construction because the route includes only two turning points, spans relatively flat ground, and is shorter than the Southern Power Line Route Alternative described below.

Southern Power Line Route Alternative

To address concerns about to greater sage-grouse from the Proposed Action due to the power line, the BLM considered the Southern Power Line Route Alternative. Under this alternative, Midway would implement the Proposed Action described in Section 2.3, with one modification: a different power line route would be used.

Instead of using the Proposed Action power line route, Midway would use the Southern Power Line Route Alternative, which would tie in to a right angle on the Pan Mine Southwest Power Line Alternative and extend south and east, roughly paralleling existing BLM 4106/CR 1180 and BLM 4006, then entering the Plan area (Figure 2.4-1). This alternative would be approximately 4.0 miles long.

19n

4.5-6 mi

CR #180 & #1181

RESPONSES TO LETTER 19 *cont.*

19m Thank you for your comment.

19n Please see response to comment 19i.

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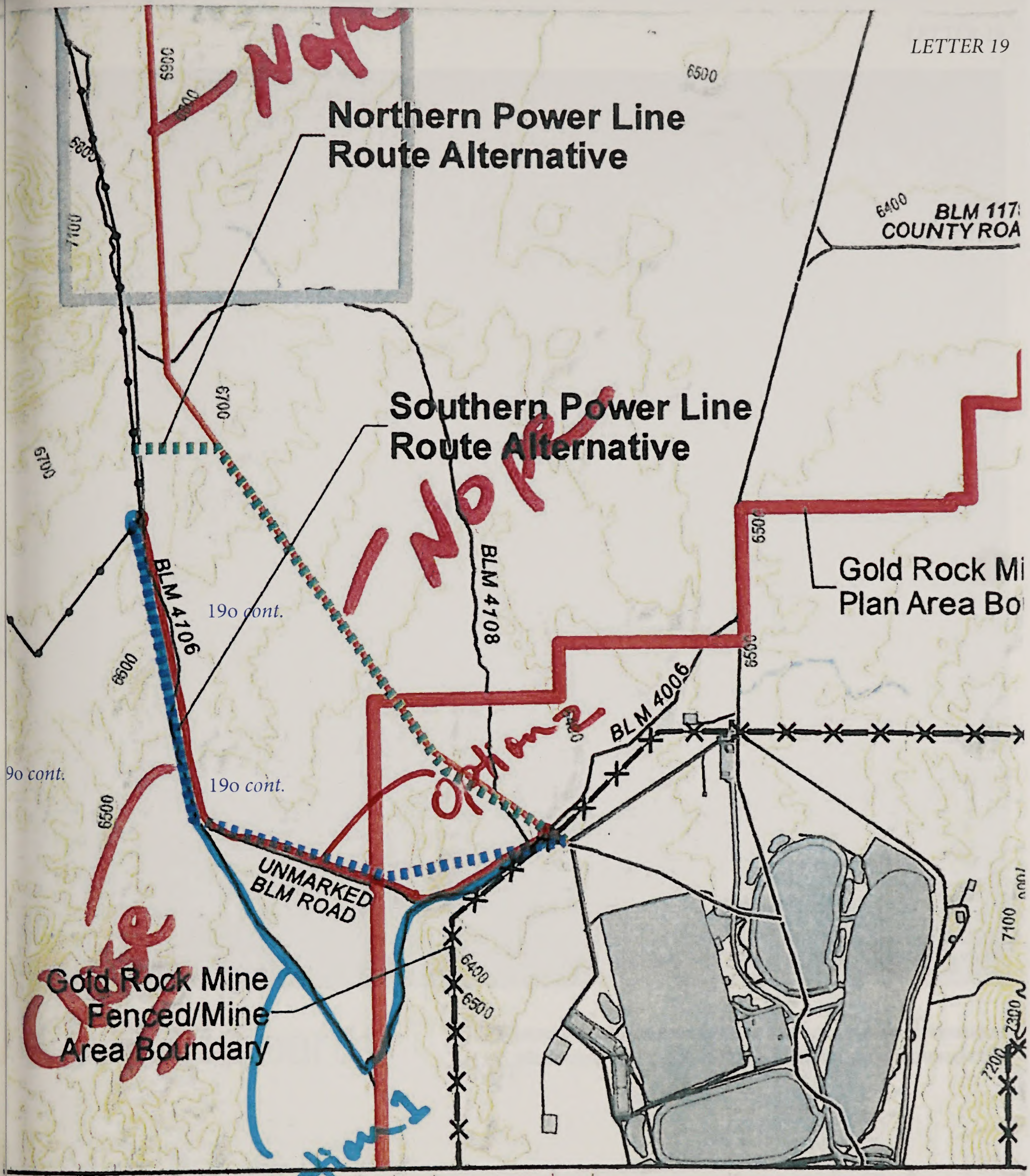
RESPONSES TO LETTER 19 *cont.*

19o Please see response to comment 19i.



19o *cont.*

19o *cont.*

19o *cont.*

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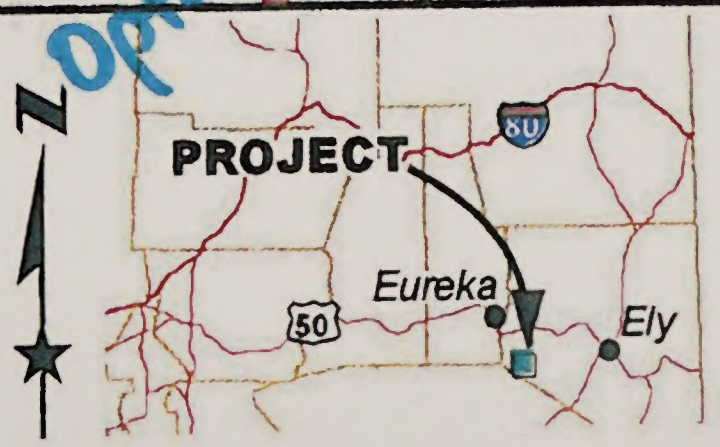

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Option 2 "Cut Across" ~4.5 miles
Option 1 ~ 5 miles
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miles
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Mount Wheeler Power would use the existing roads to access the power line; however, if existing roads do not provide sufficient access to the power line, Mount Wheeler Power would establish segments of new two-track road where appropriate. In contrast, under the Northern Power Line Route Alternative Mount Wheeler Power would establish a new two-track road along the entire length of the 3.6-mile route.

19p

2.4.2 Route Alternatives

To address concerns about potential indirect effects to greater sage-grouse from the Proposed Action due to increased traffic noise levels on Green Springs Road, the BLM considered an alternative main access route for mine-bound commercial truck and employee traffic from US 50.

19q

Northwest Main Access Route Alternative, Northern Power Line Route

Under this alternative, Midway would implement the Proposed Action described in Section 2.3, with one modification: a different main access route would be used.

Instead of using Green Springs Road as the main access route for commercial truck traffic and employees traveling from US 50, mine-bound commercial truck and employee traffic from US 50 would be directed to follow the Pan Mine access road to reach the existing Easy Junior Road and the main entrance to the Gold Rock Mine (Figure 2.4-2). If this alternative is selected, the Northern Power Line Route Alternative maintenance road would be widened and incorporated into the access route. This alternative main access route from US 50 to the Gold Rock Mine parking lot would be approximately 17.4 miles long, compared to the 18.4-mile-long existing main access route.

As part of this alternative, Midway would construct the Northwest Main Access Route Alternative, Northern Power Line Route by upgrading or constructing roads and installing ditches along the sides of the roads. The route would have a minimum of a 32-foot running surface, a central crown, and ditches for surface water runoff control, for a total road width of approximately 66 feet in accordance with appropriate standards. Midway and White Pine County would work with the BLM to obtain a FLPMA Title V Right-of-Way Grant for this route. The BLM would develop a Travel Management Plan for this Right-of-Way.

Segments of the existing Pan Mine access road and Easy Junior Road, both of which already support commercial truck traffic, would make up part of the alternative main access route. These segments would not require upgrading. Segments of existing or approved two-track roads, including the Pan Mine Southwest Power Line Route maintenance road and BLM 4006, would be widened and upgraded. Proposed segments, including the connector road from the Pan access road to the Southwest Power Line maintenance road and the Northern Power Line Route maintenance road, would be constructed to support commercial truck traffic.

During construction gravel or road base would be sourced from two BLM-approved 5-acre gravel pits, to be located along the route in areas outside of greater sage-grouse habitat. Where appropriate, Midway would work with the BLM to obtain clearance for threatened and endangered species and for cultural resources in compliance with the Programmatic Agreement (Appendix 1A) before performing surface disturbance activities. Midway would address surface water drainage along the route in compliance with NDEP's temporary stormwater permit (Williams 2014i). In contrast, the proposed main access route was upgraded several years ago, and no new surface disturbance would be required during road maintenance activities.

RESPONSES TO LETTER 19 *cont.*

19p Please see response to comment 19i.

19q Please see response to comment 19i.

Under this alternative, road use would differ from that described under the Proposed Action. All workers, contractors, vendors and visitors would be directed to use the Northwest Main Access Route Alternative, Northern Power Line Route rather than the main access route; however, a worker, contractor, vendor or visitor may choose to approach by other roads that lead to the Plan area. With the exception of the new road segment along the proposed county road re-route, these roads are not slated for improvement and travelers would use the roads at their own risk.

Northwest Main Access Route Alternative, Southern Power Line Route

Under this alternative, Midway would implement the Proposed Action described in Section 2.3, with one modification: a different main access route would be used.

Similar to the Northwest Main Access Route Alternative, Northern Power Line Route, this alternative would involve using a different main access route for commercial truck traffic and employees traveling from US 50. Instead of using Green Springs Road, mine-bound commercial truck and employee traffic from US 50 would be directed to follow the Pan Mine access road to reach the existing Easy Junior Road and the main entrance to the Gold Rock Mine (Figure 2.4-2). If this alternative is selected, the Southern Power Line Route Alternative maintenance road, which may include segments of existing roads, would be widened and incorporated into the access route. This alternative main access route from US 50 to the Gold Rock Mine parking lot would be approximately 18.3 miles long, compared to the 18.4-mile-long existing main access route.

As part of this alternative, Midway would construct the Northwest Main Access Route Alternative, Southern Power Line Route by upgrading or constructing roads and installing ditches along the sides of the roads. The route would have a minimum of a 32-foot running surface, a central crown, and ditches for surface water runoff control, for a total road width of approximately 66 feet in accordance with appropriate standards. Midway and White Pine County would work with the BLM to obtain a FLPMA Title V Right-of-Way Grant for this route. The BLM would develop a Travel Management Plan for this Right-of-Way.

Segments of existing roads that already support commercial truck traffic would make up part of the alternative access route. Segments of existing or approved two-track roads, including segments of the Pan Mine Southwest Power Line Route maintenance road and BLM 4006, would be widened and upgraded. Proposed segments, including the connector road from the Pan access road to the Southwest Power Line maintenance road and the Southern Power Line Route maintenance road, would be constructed to support commercial truck traffic. In contrast, the proposed main access route was upgraded several years ago, and no new surface disturbance would be required during road maintenance activities.

19r - CR 118D & 1181

During construction gravel or road base would be sourced from two BLM-approved 5-acre gravel pits, to be located along the route in areas outside of greater sage-grouse habitat. Where appropriate, Midway would work with the BLM to obtain clearance for threatened and endangered species and for cultural resources in compliance with the Programmatic Agreement (Appendix 1A) before performing surface disturbance activities. Midway would address surface water drainage along the route in compliance with NDEP's temporary stormwater permit (Williams 2014i).

Under this alternative, road use would differ from that described under the Proposed Action. All workers, contractors, vendors and visitors would be directed to use the Northwest Main Access

RESPONSES TO LETTER 19 *cont.*

19r Please see response to comment 19i.

Route Alternative, Southern Power Line Route rather than the main access route; however, a worker, contractor, vendor or visitor may choose to approach by other roads that lead to the Plan area. With the exception of the new road segment along the proposed county road re-route, these roads are not slated for improvement and travelers would use the roads at their own risk.

Modified County Road Re-Route Alternative

To minimize potential impacts due to surface disturbance in greater sage-grouse habitat during construction of a new road segment along the proposed county road re-route, and to maintain a through-route to Green Springs Road, the BLM considered the Modified County Road Re-Route Alternative.

Under this alternative, Easy Junior Road would be re-routed around the mine area on existing roads instead of constructing a new road segment to connect BLM 4006 and BLM 4059 (Figure 2.4-2). The length of the modification is approximately 5 miles. In combination with the existing BLM road segments on the proposed county road re-route, this alternative would be 13 miles long, which is approximately 1 mile longer than the Proposed Action county road re-route. In the future, White Pine County may decide to widen this re-route to White Pine County Road Standards. Midway and White Pine County would work with the BLM to obtain a FLPMA Title V Right-of-Way Grant for this re-route alternative. As part of the Right-of-Way Grant, the BLM would develop a Travel Management Plan for this re-route.

19s

2.4.3 Western Tailings Storage Facility Alternative

Under this alternative, Midway would implement the Proposed Action described in Section 2.3, with several modifications. To minimize effects to mule deer crucial winter range, Midway would construct the TSF and associated stormwater controls west of the heap leach pad and South WRDA, instead of south of the pit and ore stockpile. Figure 2.4-3 shows the proposed layout. This alternative TSF location would require moving several facilities within the mine area, including mine roads, reclamation soil storage areas, secondary roads, sediment basins, stock piles, explosives storage facilities, storm water controls, the water pipeline, and monitoring wells. These changes would result in a more compact footprint with shorter roads and power and water corridors between these facilities. The water pipeline for the project would be slightly longer than that under the Proposed Action to extend it to the new mill location near the center of the mine site. To further minimize effects to mule deer crucial winter range, Midway would shift the eastern boundary of the mine area and associated fence line west. As recommended in the Ely District Approved Resource Management Plan (BLM 2008), Midway would avoid performing surface disturbing exploration activities in mule deer crucial winter range from November 1 to March 31.

This alternative TSF would be contained by a narrow dam between the small ridges, or "hogbacks," to the west, and supplemented by two smaller embankments to the south. This TSF would cover about 403 acres, which is about 134 acres larger than the 269-acre Proposed Action TSF. However, the amount of borrow area needed for this alternative would be about 53 acres, which is 102 acres fewer than 155 acres of borrow area under the Proposed Action. Midway anticipates that most of the borrow material for the TSF embankments could be obtained from within the footprint of the alternative TSF location. About 20 acres of borrow area disturbance outside of the alternative TSF location may be needed. Assuming that most of the borrow material for the dams can be obtained from within the TSF footprint itself, disturbance within the mine area under this alternative would involve approximately 3,350 acres, which is about 118 fewer acres than mine area disturbance under the Proposed Action.

19s Please note that this alternative is an access route alternative. It is not a power line route alternative.

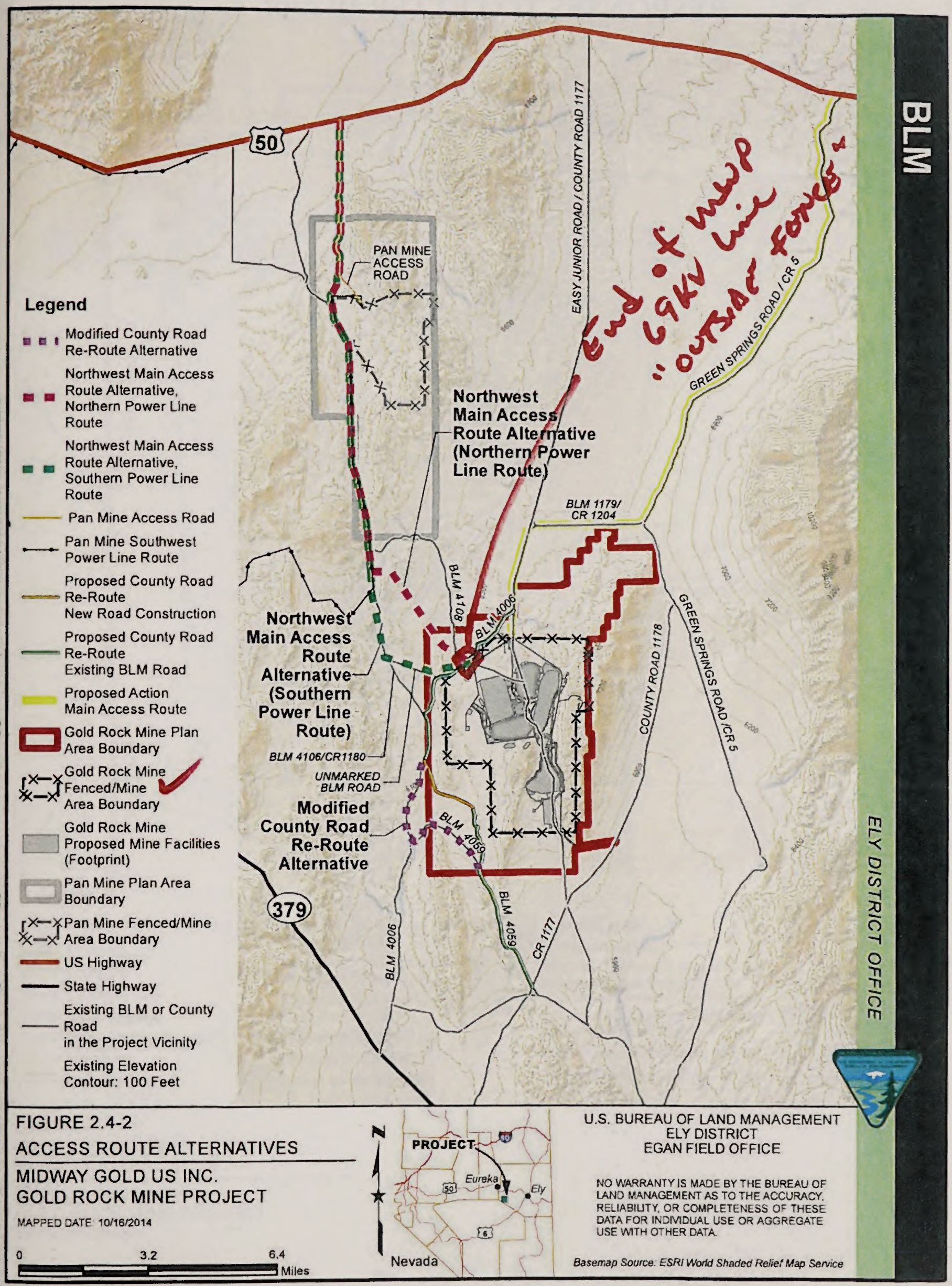

FIGURE 2.4-2
ACCESS ROUTE ALTERNATIVES
MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT
MAPPED DATE: 10/16/2014

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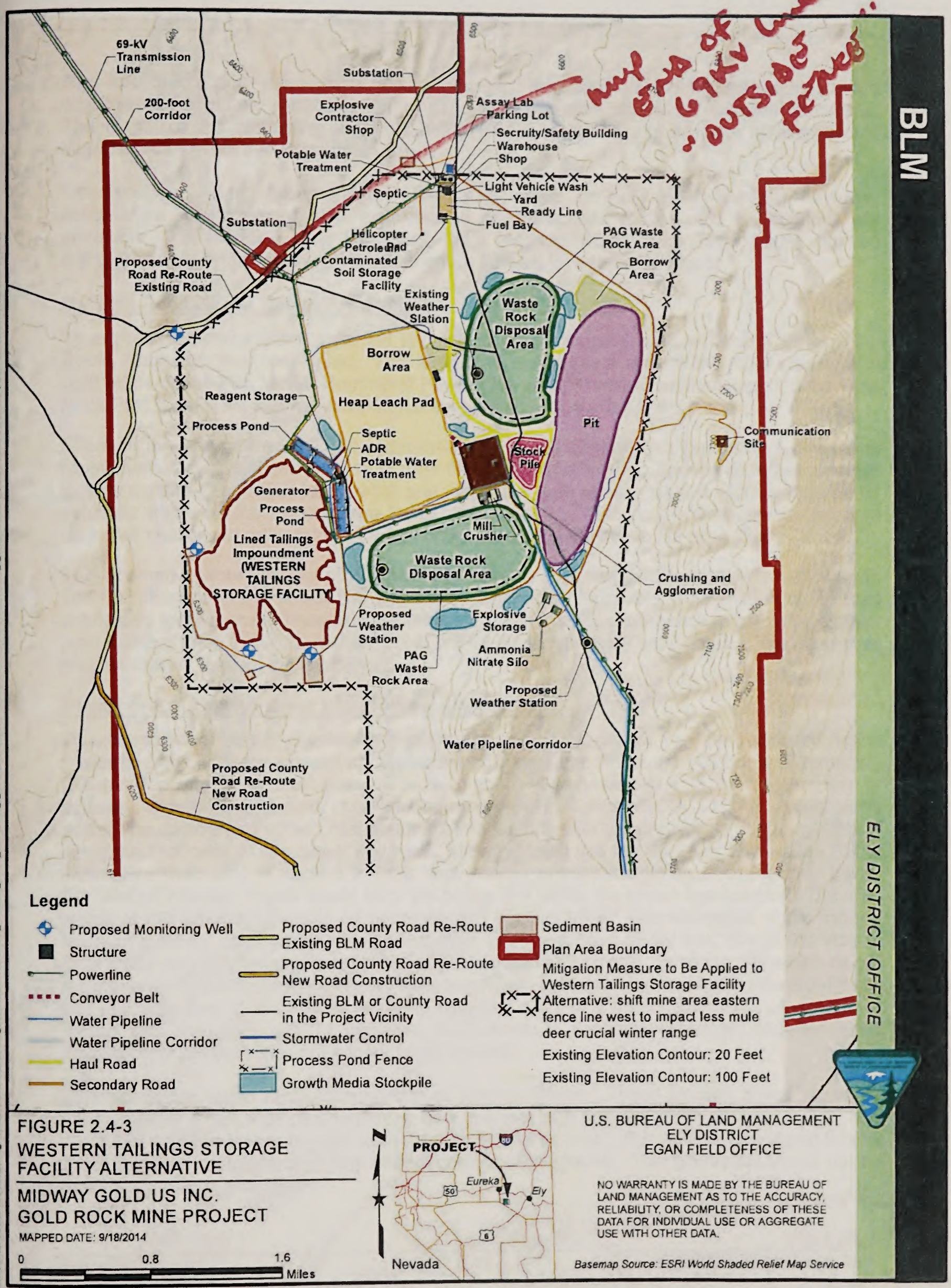
Basemap Source: ESRI World Shaded Relief Map Service

19t The text in Section 2.3.3 has been revised per this comment and comment 19l.



Need end of 69kV Line - outside of fenced...

Legend

- Proposed Monitoring Well
- Structure
- Powerline
- Conveyor Belt
- Water Pipeline
- Water Pipeline Corridor
- Haul Road
- Secondary Road
- Proposed County Road Re-Route Existing BLM Road
- Proposed County Road Re-Route New Road Construction
- Existing BLM or County Road in the Project Vicinity
- Stormwater Control
- Process Pond Fence
- Growth Media Stockpile
- Sediment Basin
- Plan Area Boundary
- Mitigation Measure to Be Applied to Western Tailings Storage Facility Alternative: shift mine area eastern fence line west to impact less mule deer crucial winter range
- Existing Elevation Contour: 20 Feet
- Existing Elevation Contour: 100 Feet

FIGURE 2.4-3
WESTERN TAILINGS STORAGE FACILITY ALTERNATIVE

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 9/18/2014

0 0.8 1.6 Miles

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Basemap Source: ESRI World Shaded Relief Map Service

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and risk of collision with wildlife would pose as increased driving hazards during mine employees' commutes, especially during mule deer migration and winter weather conditions. The length of this alternative as well as the terrain, which results in lower speeds, would increase employee travel to the mine site.

The Northeast Main Access Route Alternative would be technically feasible; however, construction, management, and maintenance of the access route would be economically infeasible. In addition, the Northeast Main Access Route Alternative would not be environmentally reasonable and was not carried forward for detailed analysis.

19u **Central Power Line Route Alternative** NO?

To address concerns about potential impacts to greater sage-grouse, a Central Power Line Route Alternative was considered. This alternative would use a straight line route starting at a right angle on the Pan Mine's Southwest Power Line Route, running southeastward to the Gold Rock Plan area. This alternative would be approximately 3.4 miles long.

Although this alternative would be approximately 0.2 mile shorter than the northern power line route alternative, this alternative would pass through steeper terrain. Surface disturbance would include cut and fill activities to establish and maintain a safe running surface width and grade for vehicular traffic on the maintenance road. 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. This alternative was not carried forward in the analysis.

Burial of Southern Power Line Route Alternative

To address concerns about potential impacts to greater sage-grouse from the Proposed Action power line, the BLM considered an alternative of burying the Southern Power Line Alternative. Overhead power lines may pose risks to greater sage-grouse due to raptor perching or collisions with the structures or conductors during evening flights (NGSGCT 2010). Burial of the power line could avoid some potential direct interference with greater sage-grouse. Instead of using the Proposed Action power line route, Midway would use the Southern Power Line Route Alternative described in Section 2.4.1.2; and instead of constructing an above-ground power line, Mount Wheeler Power would bury the power line within the power line corridor. The total length of this alternative would be approximately 4 miles long. 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, Mount 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 fluctuations is available; however, purchase and installation of the system is not economically feasible.

1v

This alternative would require installation of junction boxes. These junction boxes would be approximately 8 feet wide by 6 feet deep by 4 to 6 feet high and spaced approximately 800 feet apart with security fences around each junction box for access. The junction boxes and fences could serve as raptor perches and impact greater sage-grouse. This alternative would not be environmentally reasonable.

RESPONSES TO LETTER 19 *cont.*

19u Thank you for your comment.

19v This alternative was considered but eliminated from detailed analysis for reasons noted in text in section 2.5, and reflected in this comment.

This alternative would be technically feasible; however, burying of the power line, along with management and maintenance of the buried power line, would be economically infeasible. This alternative would not be environmentally reasonable. This alternative would not be a reasonable alternative and was not carried forward for detailed analysis.

MAKES CONSTRUCTION & RELIABILITY "TOUGH"

Southern Power Line Route Alternative Construction and Maintenance by Helicopter Alternative

19w To address concerns about potential impacts to greater sage-grouse habitat, the BLM considered an alternative of using helicopters to construct and maintain a power line within the Southern Power Line Route Alternative. Under this alternative, Midway would use the Southern Power Line Route Alternative described in Section 2.4.1.2; and instead of conventionally constructing an above-ground power line, Mount Wheeler Power would construct the power line with helicopters.

Mount Wheeler Power does not use helicopters to construct power lines. The cost of construction, management, and maintenance of a power line by helicopter would be economically infeasible. Use of helicopters could be limited by weather conditions, yet maintenance of the power line would be required during all types of weather in order to provide for continuous power service to the mine site. Furthermore, helicopter noise could impact wildlife, including special status species. Noise associated with helicopter flyovers during maintenance activities could cause species to avoid portions of the analysis area and could affect productivity of nesting birds and increase physiological stress levels for a variety of species, particularly large mammals and birds.

The alternative of building and maintaining a power line by helicopter within the Southern Power Line Route Alternative would be technically feasible. However, because construction of the Southern Power Line Route Alternative with helicopters would be much more expensive and harder to maintain, construction and maintenance of the Southern Power Line Route Alternative by helicopter would be economically infeasible. Construction and maintenance activities could cause wildlife to avoid portions of the area and would be environmentally unreasonable. This alternative was not carried forward for detailed analysis.

GOOD

Southern Drainage Bottom County Road Re-Route Alternative

To address concerns about potential impacts raised during scoping, including maintaining access and existing through-routes, the BLM considered an alternative of using the northern portion of the proposed county road re-route in combination with an existing 7.7-mile-long segment of BLM 4006/CR 1180 that would extend south through the Duckwater Creek valley to Duckwater Road. This alternative re-route would be approximately 14.5 miles long, compared to the 12-mile long proposed county road re-route.

The Southern Drainage Bottom County Road Re-Route Alternative would be technically feasible; however, implementation of the alternative would not be consistent with White Pine County's transportation planning goal of maintaining Easy Junior Road as a through-route to Green Springs Road. This alternative would result in additional disturbance due to road widening compared to the proposed county road re-route. Because White Pine County's need would not be met under the Southern Drainage Bottom County Road Re-Route Alternative, and because the alternative would have resulted in greater environmental impact, the Southern Drainage Bottom County Road Re-Route Alternative was not carried forward for detailed analysis.

RESPONSES TO LETTER 19 *cont.*

19w Thank you for your comment.

Southern Side-Slope County Road Re-Route Alternative

To address concerns about potential impacts raised during scoping, including maintaining access and existing through-routes, the BLM considered an alternative of using the northern portion of the proposed county road re-route in combination with 8.7 miles of existing and new BLM/county road that would extend south through the Duckwater Creek valley to Duckwater Road. This alternative re-route would be approximately 16 miles long, compared to the 12-mile long proposed county road re-route.

The Southern Side-Slope County Road Re-Route Alternative would be technically feasible; however, implementation of the alternative would not be consistent with White Pine County's transportation planning goal of maintaining Easy Junior Road as a through-route to Green Springs Road. This alternative would result in additional disturbance due to road construction and widening compared to the proposed county road re-route. Because White Pine County's need would not be met under the Southern Side-Slope County Road Re-Route Alternative, and because the alternative would have resulted in greater environmental impact, the Southern Side-Slope County Road Re-Route Alternative was not carried forward for detailed analysis.

2.6 COMPARATIVE ANALYSIS OF ALTERNATIVES

Table 2.6-1 provides a summary and comparison of potential effects from the Proposed Action and alternatives. Detailed descriptions of potential effects for specific resources are presented in **Chapter 4**.

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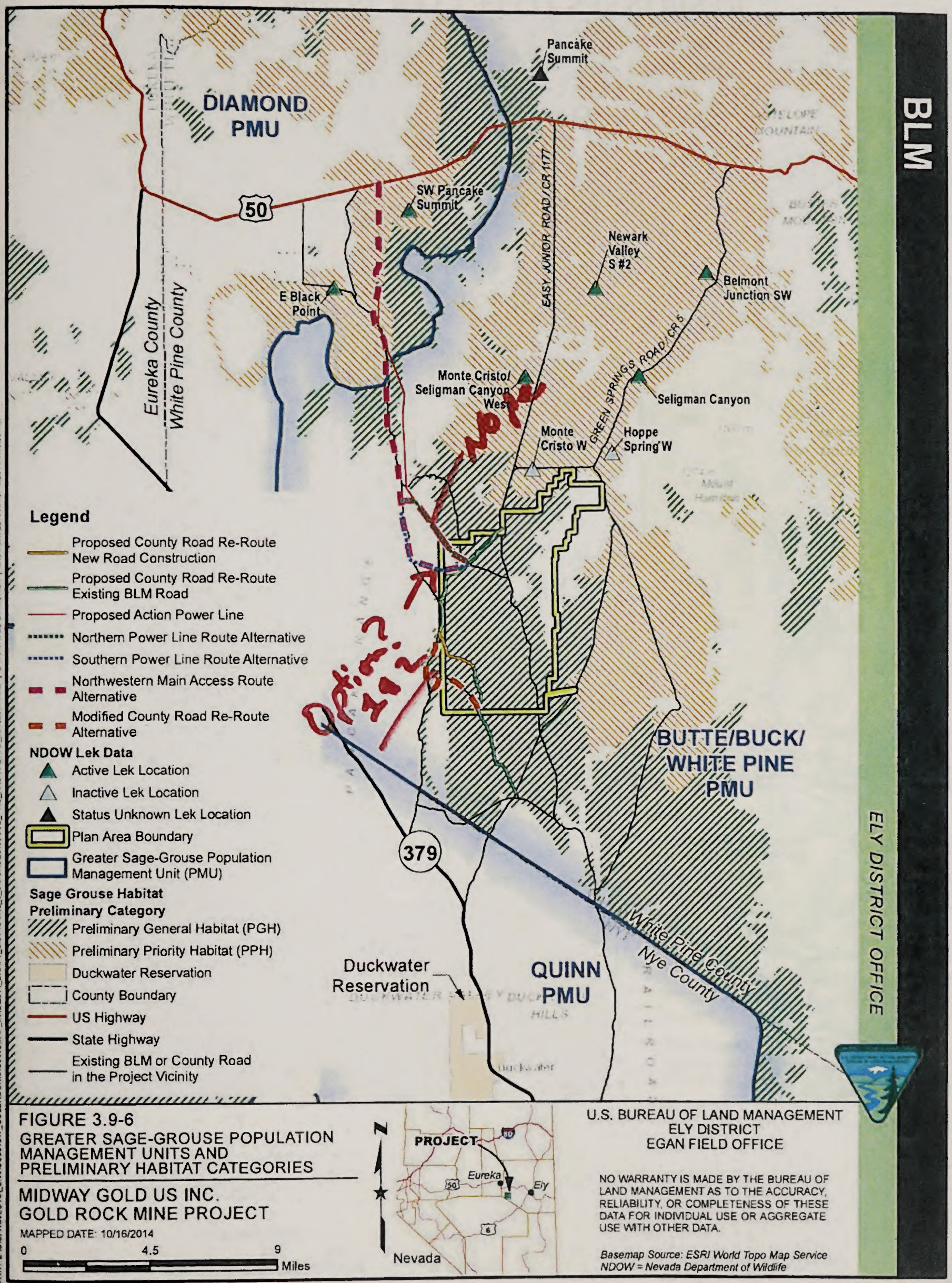

FIGURE 3.9-6
GREATER SAGE-GROUSE POPULATION MANAGEMENT UNITS AND PRELIMINARY HABITAT CATEGORIES

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 10/16/2014

0 4.5 9 Miles

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.

Basemap Source: ESRI World Topo Map Service
NDOW = Nevada Department of Wildlife

PATH: Z:\GIS\PROJECTS_ENV\GO001817_GOLDROCK\GIS\ARCMAP_MXD\2014_DRAFT_EIS\FIGURE_3_9-6 SAGEGROUSE_PMU_AND HABITAT_10162014.MXD | LAST SAVED ON: 10/16/2014 4:46:00 PM | LAST SAVED BY: JCHEN

RESPONSES TO LETTER 19 *cont.*

19x Please see response to comment 19i.

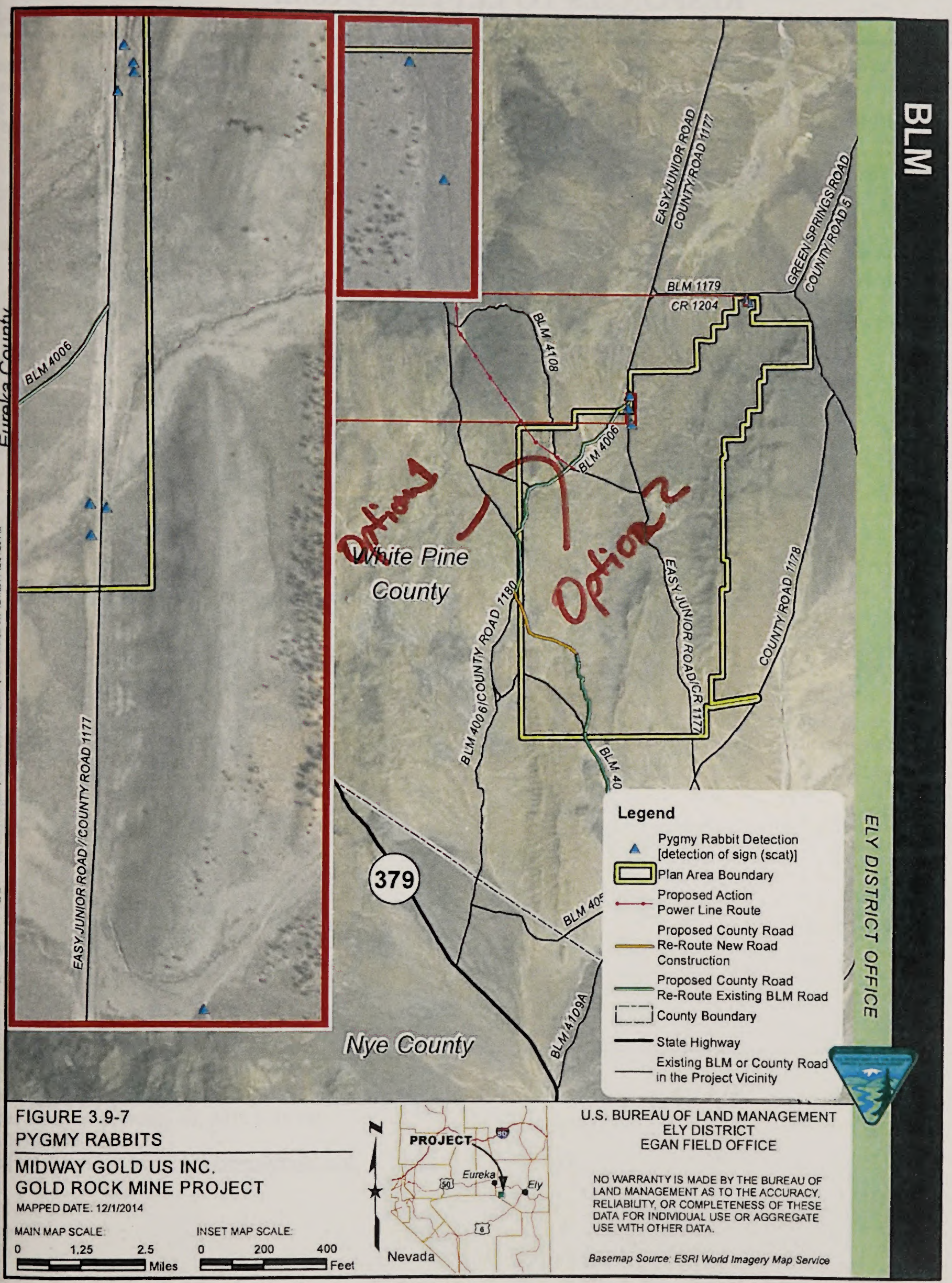

FIGURE 3.9-7
PYGMY RABBITS

MIDWAY GOLD US INC.
GOLD ROCK MINE PROJECT

MAPPED DATE: 12/1/2014

MAIN MAP SCALE:
0 1.25 2.5 Miles

INSET MAP SCALE:
0 200 400 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.

Basemap Source: ESRI World Imagery Map Service

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19y

19y Please see response to comment 19i.

Womack, Carrie

From: Netcher, Daniel <dnetcher@blm.gov>
Sent: Tuesday, February 24, 2015 2:13 PM
To: Jesse Murdock
Subject: Re: Preferred routes for Gold Rock

Thanks Jesse - we will take these concerns into account!

Thanks,

Dan

Dan Netcher
Project Manager - Energy
Ely District
HC 33 Box 33500
Ely, NV 89301
775 289 1872

On Tue, Feb 24, 2015 at 1:10 PM, Jesse Murdock <mwpjesse54@mwpower.org> wrote:

An:

I went out and spent most of the day on site yesterday and I think Option 1 is best for everyone but Option 2 could be used but it is ~ 1.5 miles longer…

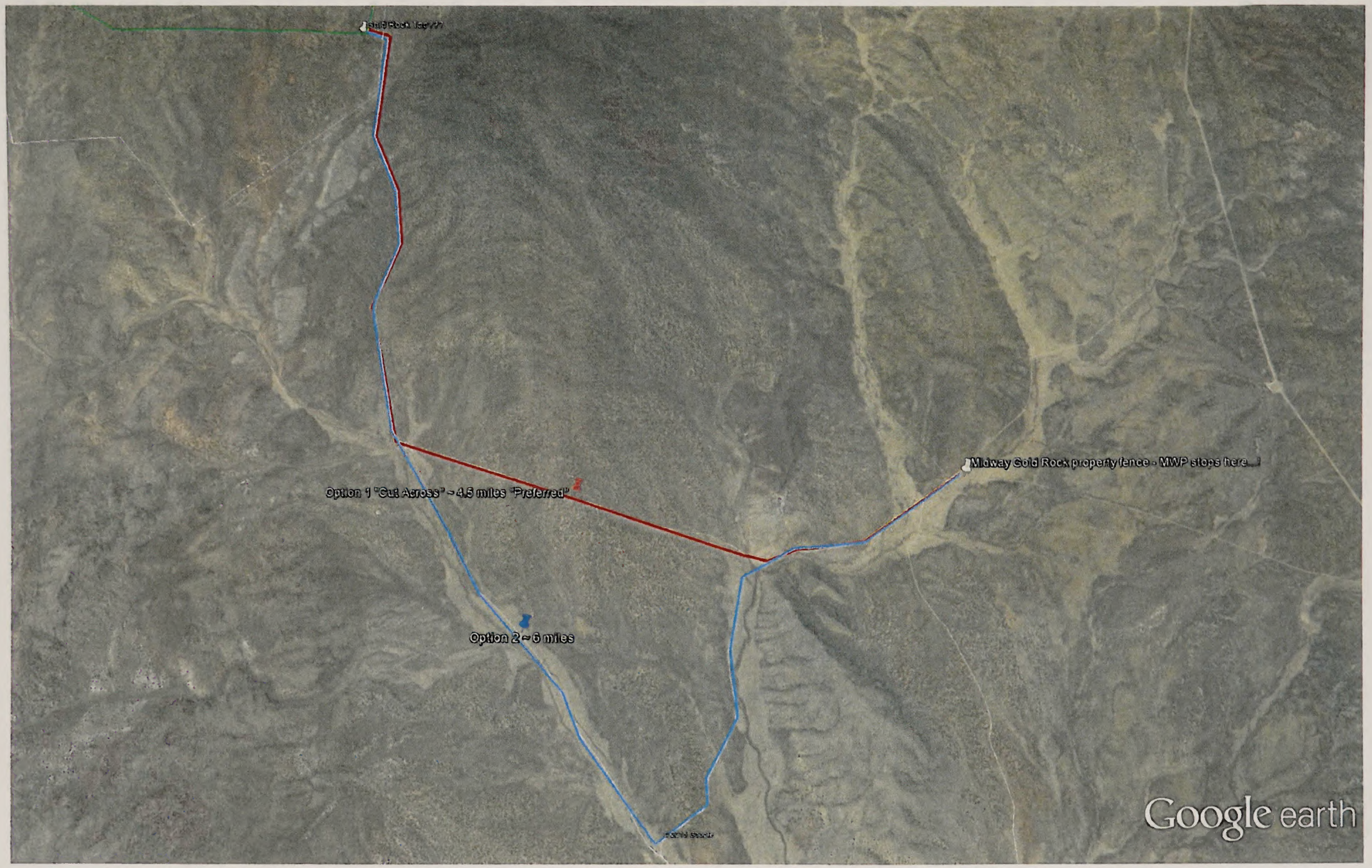
Thx

Jesse

From: bizhub@mwpower.org [mailto:bizhub@mwpower.org]
Sent: Monday, February 23, 2015 5:46 PM
To: Jesse Murdock
Subject: Message from bizhub@mwpower.org

RESPONSES TO LETTER 20

20 Please see response to comment 19i.



Google earth

miles 2
km

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WILDEARTH GUARDIANS
A FORCE FOR NATURE

Bureau of Land Management
APR - 3 2015
RECEIVED
Ely, NV

March 30, 2015

BLM Ely District Office
Attn: Dan Netcher
HC 33 Box 33500
Ely, NV 89301

Dear Mr. Netcher:

The following are the comments of WildEarth Guardians on the Gold Rock mine project. We are concerned that the agency has failed to uphold its legal mandates regarding the need to conserve greater sage grouse and Railroad Valley springfish, as outlined below. Impacts to sage grouse also potentially result in impacts to Native American Historical and Cultural activities. DEIS at 4-127. This raises National Historic Preservation Act issues. Please address the issues raised in these comments through your NEPA process.

Failure to apply BLM Sensitive Species policy

The Objectives of BLM's sensitive species policy includes the following: "To initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA." BLM Manual 6840.02. Under this policy, District Managers and Field Managers are tasked with "Ensuring that land use and implementation plans fully address appropriate conservation of BLM special status species." BLM Manual 6840.04(E)(6). This is defined as follows: "as applied to Bureau sensitive species, the use of programs, plans, and management practices to reduce or eliminate threats affecting the status of the species, or improve the condition of the species' habitat on BLM-administered lands." BLM Manual 6840, Glossary 2. Importantly,

> When appropriate, land use plans shall be sufficiently detailed to identify and resolve significant land use conflicts with Bureau sensitive species without deferring conflict resolution to implementation-level planning. Implementation-level planning should consider all site-specific methods and procedures needed to bring species and their habitats to the condition under which management under the Bureau sensitive species policies would no longer be necessary.

BLM Handbook 6840.2(B). Under this policy, "Bureau sensitive species will be managed

RESPONSES TO LETTER 21

21a Thank you for your comment. Please see responses to comments 21b through 21q.

21b The BLM has followed the applicable regulations, manuals and policies in the development of this document. Thank you for your comment.

Section 4.9.3 of the EIS describes impacts to Greater Sage-Grouse. The Greater Sage-Grouse Land Use Plan Amendment (GRSG LUPA) Final EIS and ROD were issued in September 2015. The BLM has followed the applicable regulations, manuals and policies in the development of this document. Monitori and mitigation measures listed in section 4.9.11 (FEIS Section 4.9.12) have been revised to be consistent with the GRSG LUPA and Minerals Resources Management Decisions (MRMD), subject to valid existin rights. The GRSG LUPA outlines the procedures and policy for developing operations within Greater Sa Grouse habitat.

consistent with species and habitat management objectives in land use and implementation plans to promote their conservation and **to minimize the likelihood and need for listing** under the ESA." BLM Manual 6840.06, emphasis added.

In implementing this policy, "the BLM shall manage Bureau sensitive species and their habitats to minimize or eliminate threats affecting the status of the species or to improve the condition of the species habitat." BLM Manual 6840.2(C). The BLM is responsible for "Ensuring that BLM activities affecting Bureau sensitive species are carried out in a way that is consistent with its objectives for managing those species and their habitats at the appropriate spatial scale." BLM Manual 6840.2(C)(2).

The "inadequacy of regulatory mechanisms" found by the Service in regard to BLM land-use planning direction for sage grouse is indicative that the agency has been failing to implement its Sensitive Species policy. In the context of the Gold Rock project, the BLM has thus far failed to prevent unnecessary or undue degradation to sage grouse habitats and populations in order to fulfill its Sensitive Species obligations.

The project results in "unnecessary" or "undue" degradation to sage grouse habitat

Pursuant to FLPMA, must manage public lands in a manner that does not cause either "undue" or "unnecessary" degradation. 43 U.S.C. § 1732(b). In this case, the siting of powerlines and access roads through Preliminary Priority Habitats and in close proximity to leks results in both unnecessary and undue degradation to sage grouse habitats and populations, which also conflicts with the agency's Sensitive Species manual. To the extent that such degradation would have been avoided given the availability of other reasonable alternatives that would prevent this degradation, it also would be considered "unnecessary." The approval of the Gold Rock project leads to a violation of FLPMA if permitted actions result in degradation that is either "unnecessary" or "undue."

BLM's Unnecessary or Undue Degradation ("UUD") responsibilities are intertwined with the agency's NEPA duties. Under NEPA, BLM must identify impacts a proposed action will have to the environment; married to this obligation are the duties imposed by FLPMA to identify the thresholds of acceptable impact and then determine whether the impacts are unnecessary or undue. If the impacts are determined to be necessary and unavoidable, BLM must then analyze whether the impacts are undue. NEPA then reasserts itself in the process by mandating that alternatives be considered to ensure that unnecessary or undue actions are not undertaken and to ensure that methodologies used to prevent UUD are supported and verified. *Ecology Center, Inc. v. Austin*, 430 F.3d 1057, 1065 (9th Cir. 2005).

In the context of hard-rock mining, "[a] reasonable interpretation of the word 'unnecessary' is that which is not necessary for mining. 'Undue' is that which is excessive, improper, immoderate, or unwarranted." *Utah v. Andrus*, 486 F.Supp.995, 1005 n.13 (Dist. Utah 1979). FLPMA requires that,

21c Section 4.9.3 of the EIS describes impacts to Greater Sage-Grouse. This EIS has not identified any undue or unnecessary degradation of public lands. The EIS has identified potential impacts to Greater Sage-Grouse and has proposed mitigation and monitoring to reduce those potential impacts.

The BLM has followed the applicable regulations, manuals and policies in the development of this document. Thank you for your comment.

The content and implementation of the BLM's record of decision and amendment of the Carson City District and Tonopah Field Office Resource Management Plans in relation to the U.S. Forest Service's Greater Sage-Grouse Bi-state Distinct Population Segment (Bi-state sage-grouse) Forest Plan Amendment is outside of the scope of this EIS.

In accordance with the Greater Sage-Grouse Land Use Plan Amendment (BLM 2015b), the BLM has revised the Greater Sage-Grouse mapping used to analyze impacts in this FEIS. Sections 3.9 and 4.9.3 has been revised to reflect acreages of Greater Sage-Grouse habitat based on this revised mapping. Mitigation and monitoring of Greater Sage-Grouse habitat described in Section 4.9.11 (FEIS Section 4.9.12) and meet all current BLM policies.

An alternative, burying the 69-kV power line from the Pan Mine to the Gold Rock Mine Project, was considered and dismissed in Chapter 2 (see Section 2.5.2). As described in that section, reasons for dismissal included:

- lack of local repair and maintenance support for an underground 69 kV line
- high risk of maintenance problems due to accidental grounding in lightning storms
- purchase and installation of the system is not economically feasible
- This alternative would require installation of junction boxes. These junction boxes would be approximately 8 feet wide by 6 feet deep by 4 to 6 feet high and spaced approximately 800 feet apart with security fences around each junction box for access. The junction boxes and fences could serve as raptor perches and impact Greater Sage-Grouse.

> the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; . . . that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use;

43 U.S.C. § 1701(a)(8). At the same time, FLPMA directs that these uses be balanced with mineral extraction by requiring that,

> the public lands be managed in a manner which recognizes the Nation's need for domestic sources of minerals . . . from the public lands including implementation of the Mining and Minerals Policy Act of 1970 . . .

43 U.S.C. § 1701(a)(12). The key here is for BLM to balance these opposing needs.

According to the original mining regulations, "Unnecessary or undue degradation means impacts greater than those that would normally be expected from an activity being accomplished in compliance with current standards and regulations and based on sound practices, ***including use of the best reasonably available technology***." 43 C.F.R. § 3802.0-5(l) (emphasis added). In the Bi-State Plan Amendment EIS, to the extent that BLM has failed to apply in its proposed plan the recommended sage grouse protections presented to it by its own experts (the BLM National Technical Team), and development approved under the resulting plan will result in unnecessary and/or undue degradation of sage grouse habitats and result in sage grouse population declines in these areas, it undermines the effectiveness of the RMP amendment as an adequate regulatory mechanism in the context of the decision.

Specific conservation measures that fail to prevent significant impacts to sage grouse and their habitats (and thereby result in unnecessary and/or undue degradation pursuant to FLPMA) are outlined in detail in the sections of the comments that follow, but include permitting access roads that are likely to extirpate lek populations in proximity to roadways, and permitting aboveground powerlines likely to have major impacts on sage grouse populations and habitats while buried powerlines are a feasible alternative and would not.

Failure to meet NEPA scientific integrity requirements

BLM must evaluate the effectiveness of the conservation measures used to minimize adverse impacts to wildlife and sensitive species with the best available science. "The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA." 40 C.F.R. § 1500.1(b) (2009). "For this reason, agencies are under an affirmative mandate to 'insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements[.] identify any methodologies used and . . . make explicit reference by footnote to the scientific and other sources relied upon for conclusions[.]'" *Envtl. Def. v. U.S. Army Corps of Eng'rs*, 515 F. Supp. 2d 69, 78 (D.D.C. 2007) (citing 40 C.F.R. § 1502.24 (2009)).

21d Thank you for your comment. Note that "A Report on National Greater Sage - Grouse Conservation Measures" (Sage - grouse National Technical Team 2011) urges caution when using unreplicated studies for regulating projects (see Appendix B Scientific Inference in Sage - grouse National Technical Team (2011)). As well, BLM policies based on the Data Quality Act require that scientific studies meet stringent requirements for transparency and replicability when used in regulation. The BLM has kept these principles in mind when preparing the EIS and therefore cited a variety of sources, both peer-reviewed literature and site-specific reports, in the impact analysis to assure that this document is supported by the current and best science. References of unreplicated or noncorrelative studies have been presented as such in the EIS. Please see references in FEIS Chapter 8 (formerly Chapter 7).

The NTT report and its associated conservation measures are not intended to create a standard for Greater Sage-Grouse management. Rather the goal of the report is to provide a resource for BLM field personnel to use, as appropriate, in addressing on-the-ground conservation through the planning and project-implementation process.

The NTT conservation measures were considered as part of the preferred alternative in the Nevada and Northeastern California Greater Sage-Grouse EIS. The ROD for the Nevada and Northeastern California Greater Sage-Grouse EIS was issued in September 2015 and the BLM's RMPs were amended. The BLM has followed the applicable retgulations, manuals and policies in the development of this document.

The BLM's National Technical Team (2011) was convened to review the best available science and make recommendations that fully address the inadequacy of regulatory mechanisms for greater sage grouse:

> To ensure BLM management actions are effective and based on the best available science, the National Policy Team created a National Technical Team (NTT) in August of 2011. The BLM's objective for chartering this planning strategy effort was to develop new or revised regulatory mechanisms, through Resource Management Plans (RMPs), to conserve and restore the greater sage-grouse and its habitat on BLM-administered lands on a range-wide basis over the long term.

NTT (2011) at 4. Accordingly, "This document provides the latest science and best biological judgment to assist in making management decisions." NTT (2011) at 5. This document represents the BLM's expert opinion, and although policy documents state that the agency is not bound to adopt these measures in its RMP amendments, in cases where the agency offers divergent conservation measures, it must supply a scientifically supported justification for choosing a different path, which is arbitrary and capricious and an abuse of discretion under the Administrative Procedures Act ("APA"). In many cases, the agency has elected to substitute alternative conservation measures to the NTT recommendations without providing sufficient science-based justification. The result is twofold: A failure to uphold NEPA's scientific integrity requirements, and a project that contains inadequate regulatory mechanisms.

Specific measures proposed for implementation in the proposed project that are in conflict with the best available science and/or the National Technical Team report are described in detail in the sections that follow.

Failure to meet NEPA hard look requirements

Section 102(2)(C) of NEPA requires that the responsible federal agency prepare a detailed statement on the environmental impacts of the proposed action and any adverse environmental effects which cannot be avoided should the proposal be implemented. The regulations implementing NEPA provide that "[t]o determine the scope of environmental impact statements, agencies shall consider . . . (1) Connected actions, which means that they are closely related and therefore should be discussed in the same impact statement. . . . (2) Cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement. . . . [and] (3) Similar actions, which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography." 40 C.F.R. § 1508.25.

NEPA's mandate is that all federal agencies analyze the likely effects of their actions, as well as address the potential alternatives. "Agencies are to perform this hard look *before* committing themselves irretrievably to a given course of action so that the action can be shaped to account for environmental values. NEPA § 102(2)(c) requires the agency to consider numerous factors [including] irreversible commitments of resources called for by the proposal." *Sierra Club v.*

21e Thank you for your comment. The BLM has taken a hard look at the impacts based on the proposed project.

Hodel, 848 F.2d 1068 (10th Cir. 1988) (rev'd on other grounds)(emphasis added). NEPA provides procedural protections for resources at risk by requiring analysis of impacts *before* substantial decisions are made that set development in motion. *See Conservation Law Foundation v. Watt*, 560 F. Supp. 561, 581 (D. Mass. 1983), *aff'd by Massachusetts v. Watt*, 716 F. 2d 946 (1st Cir. 1983).

In several cases, the agencies' analysis of direct and cumulative impacts to greater sage grouse or their habitats, or impacts to the threatened Railroad Valley springfish, fails to meet the 'hard look' standards of NEPA as outlined above. These examples are specifically described in the sections of this Protest that follow.

Greater Sage Grouse

We are concerned that the proposed project will result in severe impacts to Preliminary Priority habitats identified for elevated levels of protection under the Nevada-Northeastern California Greater Sage-grouse RMP Amendment Draft EIS, and will fail to implement the conservation prescriptions that will be contained in the final plan amendment.

Impacts from Roads

Holloran (2005) found that sage grouse leks within 1 mile of main haul roads (defined in this study as roads serving 5 or more oil and gas wells) declined significantly, regardless of whether or not the road was visible from the lek site. Holloran (2005) also found that higher levels of traffic resulted is stronger levels of impact to lek populations. The project will add an estimated 292 truck trips per day along the Green Springs Road. DEIS at 4-76. This will increase collision risk due to extremely close proximity to lek habitats and also contribute to noise and disturbance of sage grouse using the area. The magnitude of increased vehicle traffic for this project far exceeds the main haul road criteria of the Holloran (2005) study. Braun (1986) and Remington and Braun (1991) also documented significant impacts from mine-related activities on sage grouse populations specific to proximity of roads, supporting the 2-mile area around haul roads where significant lek population impacts occur. BLM itself recognizes this 2-mile zone of influence in designating a buffer on two miles either side of roads for the purposes of impacts analysis. DEIS at 4-52. Active leks are as close as 194 feet from proposed project access routes. DEIS at Table 4.9-3.

Both the Easy Junior Road and Green Springs Road traverse Preliminary Priority Habitat en route to paved roads, and are unacceptably close to active sage grouse leks. *See* DEIS at Figure 3.9-6. BLM also notes that the primary road access to the mine, Green Springs Road, crosses sage grouse habitats. DEIS at 1-17. There is a lek locates within 0.5 mile of Green Springs Road. DEIS at 1-17. Five leks are located within 2 miles of Green Springs Road and East Junior Road. DEIS at 3-77. The Northwestern Main Access Route Alternative similarly traverses PPH unnecessarily and is unacceptably close to the East Black Point and SW Pancake Summit leks. DEIS at Figure 3.9-6. We are concerned that impacts from traffic noise, dust, and motion along access roads will result in unnecessary and undue degradation to sage grouse habitats and populations, through stress, direct mortality, and displacement of birds from otherwise suitable habitats during breeding/lekking, nesting, brood-rearing and wintering periods.

21f Section 4.9.3 of the EIS describes impacts to Greater Sage-Grouse. The Nevada-Northeastern California Greater S Grouse RMP Amendment Final EIS and ROD, and related RMPs have been issued.

The environmental impact analysis conducted in the FEIS indicated that under all of the action alternatives, includi the BLM Preferred Alternative, impacts to Greater Sage-Grouse habitat would be avoided and minimized to the ext practicable. Implementation of any of the action alternatives in conjunction with required mitigation measures is no anticipated to result in undue or unnecessary degradation. The Proposed Action and other alternatives would be consistent with the Ely District Record of Decision and Approved Resource Management Plan (BLM 2008, as amended), as required by regulation (43 CFR 1610.5-3(a)), and mitigation measures would be consistent with the C LUPA.

Under all action alternatives for the Gold Rock Mine Project, the proponent would provide off-site mitigation on fe lands to compensate for residual direct surface disturbance impacts to mapped Greater Sage-Grouse PHMA and GH (FEIS Mitigation Measure W-9).

An off-site compensatory mitigation plan for Greater Sage-Grouse would be developed and approved by the BLM l later than 90 days after issuance of the ROD. The plan would identify the total area to be mitigated and specify mitigation measure(s), site selection procedures, and cost estimation.

Even though net conservation gain is not required for this non-discretionary action, net conservation gain would be achieved through Midway's voluntary funding of off-site habitat improvement at a ratio of 3 acres of restoration fo each 1 acre of residual direct surface disturbance (3:1) in mapped PHMA and 2 acres of restoration for each 1 acre o residual direct surface disturbance (2:1) in mapped GHMA.

21g Section 4.9.3 of the EIS describes the potential impacts of the haul roads, including noise, disturbance, and vehicle collision. The Northwest Main Access Route Alternative was developed, in part, to address these concerns and is expected to have a lower level of impact to Greater Sage-Grouse and their leks. This route would consolidate traffi with the Pan Mine's traffic, be located farther from known leks, and avoid PHMA to a greater extent. The Northwe Main Access Route Alternative was designed by NDOW and the BLM to use topographic features as noise barriers minimize impacts on the leks. 2014-2015 noise monitoring for the Pan project show that this design has been successful. In 2014, only one noise exceedance occurred that was unexplainable and was attributed to mine-related activities. In 2015, six exceedances were reported: three were caused by lack of data due to battery failure, and the other three were caused by water truck activities in northeastern region of the Pan Mine. No traffic-related exceedan es were reported for either lek. The potential impacts of all alternatives on Greater Sage-Grouse are disclosed in the El The BLM has clarified the description of noise exceedances for 2014 and noted results from 2015 noise monitoring activities in the FEIS.

As noted in Section 4.9.11 (FEIS Section 4.9.12) , Midway would be required to submit a noise monitoring and mitigation plan subject to BLM approval.

Traffic-related Noise

Noise can have a major negative impact on sage grouse, causing disturbance and displacement of birds from preferred habitat and drowning out the mating calls of males during the lekking season. Blickley and Patricelli (2012) found that low-frequency noise from oil and gas development can interfere with the audibility of male sage grouse vocalizations:

> We found that noise produced by natural gas infrastructure was dominated by low frequencies, with substantial overlap in frequency with Greater Sage-Grouse acoustic displays. Such overlap predicted substantial masking, reducing the active space of detection and discrimination of all vocalization components, and particularly affecting low-frequency and low-amplitude notes.

Such masking could increase the difficulty of mate assessment for lekking greater sage grouse. These researchers went on to state, "Ultimately, increased difficulty in finding leks or assessing males on the leks may lead to lower female attendance on noisy leks compared with quieter locations. Males may also avoid leks with high levels of noise if they perceive that their vocalizations are masked." Noise also causes stress to sage grouse. According to Blickley et al. (2012b: 1),

> We found strong support for an impact of noise playback on stress levels, with 16.7% higher mean FCM [fecal corticoids, an index of stress] levels in samples from noise leks compared with samples from paired control leks. Taken together with results from a previous study finding declines in male lek attendance in response to noise playbacks, these results suggest that chronic noise pollution can cause greater sage-grouse to avoid otherwise suitable habitat, and can cause elevated stress levels in the birds who remain in noisy areas.

According to Blickley et al. (2010), "The cumulative impacts of noise on individuals can manifest at the population level in various ways that can potentially range from population declines up to regional extinction. If species already threatened or endangered due to habitat loss avoid noisy areas and abandon otherwise suitable habitat because of a particular sensitivity to noise, their status becomes even more critical.

Blickley et al. (2012a) played back recorded continuous and intermittent anthropogenic sounds associated with natural gas drilling and roads at leks. For 3 breeding seasons, they monitored sage grouse abundance at leks with and without noise. Peak male attendance (i.e., abundance) at leks experimentally treated with noise from natural gas drilling and roads decreased 29% and 73%, respectively, relative to paired controls. Decreases in abundance at leks treated with noise occurred in the first year of the study and continued throughout the experiment. Intermittent noise had a greater effect than continuous noise. Female attendance averaged a decrease of 48%; male attendance averaged a decrease of 51%. Road noise leks decreased by 73% versus control leks; drilling noise leks decreased 29% versus control leks. There were residual effects of noise after the treatment ceased. These researchers concluded that sage grouse do not habituate to noise impacts over time. Piquette et al (2014) found that intermittent noise suppressed breeding activity on Gunnison sage grouse leks in Colorado.

21h

Section 4.9.3 of the EIS describes impacts to Greater Sage-Grouse. Alternatives have been developed to analyze these issues and monitoring and mitigation have been developed based on the analysis completed; see Section 4.9.3 and 4.9.11 (FEIS Section 4.9.12). Section 5.11 describes cumulative impacts from noise.

Noise impacts are a concern far beyond the lek itself

We are also concerned that noise may have an adverse effect on sage grouse during nesting, brood-rearing, and wintering periods. Holloran and Anderson (2005) found that sage grouse nest within 5.3 miles of the lek site (although some studies have documented nesting beyond this point). All nesting habitats are important from the standpoint of noise reduction, and noise abatement standards should apply equally to all habitats important to the life cycle of sage grouse.

It is reasonable to suppose that if noise that mimics oil and gas truck traffic causes elevated levels of stress-related metabolites in grouse on the lek (Blickley et al. 2012b), that this physiological response would be substantially similar during other parts of this bird's life cycle. Indeed, these researchers stated, "Noise at energy development sites is less seasonal and more widespread and may thus affect birds at all life stages, with a potentially greater impact on stress levels." Patricelli et al. (2012) recognized this explicitly:

> "Second, and much more importantly, if noise levels drop down to stipulated levels at the edge of the lek, then much of the area surrounding the lek will be exposed to higher noise levels (see Figures 3 & 4). This management strategy therefore protects only a fraction of sage-grouse activities during the breeding season—mate assessment and copulation on the lek—leaving unprotected other critical activities in areas around the lek, such as foraging, roosting, nesting and brood rearing."

In the Wyoming Basins Ecoregional Assessment, the authors pointed out, "Any drilling <6.5 km [approximately 4 miles] from a sage-grouse lek could have indirect (noise disturbance) or direct (mortality) negative effects on sage-grouse populations." WBEA at 131. The same would be true for similar levels of noise from mining activity.

The scientific studies conducted within the Lander Field Office evaluates the impacts of development-related noise on sage grouse (Patricelli et al. 2012). Patricelli also recommends that noise be limited to 10 A-weighted decibels above the ambient noise level, but points out that 39 decibels is not the appropriate ambient noise level for their Lander Field Office study site (and generally), but instead that 20 to 22 decibels is the actual background noise level measured at sage grouse leks. To achieve these levels, these researchers recommend: "Therefore to avoid disruptive activity in areas crucial to mating, nesting and brood-rearing activities, we recommend that roads should be sited (or traffic should be seasonally limited) within 0.7-0.8 miles from the edge of these areas." *Id.* BLM will be in the appropriate range so long as it retains 19 to 20 dBA as the ambient noise level for the project area.

Impacts of noise are documented in attached studies, including displacement from habitat (Blickley and Patricelli 2010, Blickley et al. 2012a), masking of breeding vocalizations (Blickley and Patricelli 2012), elevated stress levels (Blickley et al. 2012b), and population declines (Blickley and Patricelli 2010).

Projected noise levels violate FLPMA UUD thresholds

21i The text was revised to acknowledge that Greater Sage-Grouse would also be exposed to noise in foraging/nesting/brood-rearing habitats in some circumstances.

Text in Section 4.9.3 notes that an ambient noise level of 16 to 20 dBA is likely appropriate for assessment of impacts, and notes noise-related impacts to Greater Sage-Grouse, as described in the comment.

Projected noise levels violate FLPMA UUD thresholds

BLM concedes that noise levels due to truck traffic are likely to exceed 10 dBA at the Monte Cristo West Lek and Seligman Canyon Lek, each of which are within 200 feet of the main access route. DEIS at 4-66. Similar problems are likely to result at the East Black Point and SW Pancake Summit leks if the Northwestern Main Access Route Alternative is selected. Previous analysis indicated that noise levels higher than 35 dBA due to road maintenance and exploration would occur at 4 leks (Hoppe Spring West, Belmont Junction West, Monte Cristo West, and Emigrant) and noise levels due to vehicle traffic would exceed 35 dBA at 3 leks (Belmont Junction West, Monte Cristo West, and Emigrant). DEIS at 4-66. BLM concedes that unmitigated project-related noise is likely to result in significant impacts to sage grouse that may last long-term. DEIS at 4-67. This constitutes undue degradation, which is also unnecessary because BLM could require main hauling traffic to use existing roads southward from the project area, avoiding Priority Habitats.

We are not convinced that proposed monitoring and noise mitigation measures required under all alternatives (DEIS at 4-106 and 107) will prevent major impacts to sage grouse. From a noise perspective, short of preventing vehicle passage along the road during the prescribed hours, monitoring will not make truck traffic quieter. Payment to a mitigation bank does nothing to reduce project impacts, and the mitigation bank concept has yet to show success at increasing sage grouse numbers on lands supported by mitigation banking. In addition, sage grouse use the lands within 0.6 mile of leks for roosting during non-displaying hours (*see, e.g.,* Rothenmaier 1979, Manier et al. 2014), and noise during the middle of the day would likely cause stress to and displacement of sage grouse.

BLM could readily require that all project-related traffic be routed southward along existing gravel roads to Highway 379 in ways that completely avoid Preliminary Priority Habitat (see Figure 3.9-6). This would completely avoid impacts to PPH, an while significant impacts would yet occur to PGH, the levels of disturbance and disruption to sage grouse would fall within National Technical Team recommendations for Priority Habitat conservation. BLM's failure to consider such an alternative for access route designation constitutes a violation of NEPA's range of reasonable alternatives requirements and renders the undue degradation to sage grouse habitat from elevated traffic levels unnecessary as well.

Impacts from Powerlines

Inappropriate protections from transmission lines and projects with rights-of-way are a significant threat to sage grouse. Wisdom et al. (2011) found that lands within 3.1 miles of transmission lines and highways had an elevated rate of lek abandonment. Nonne et al. (2011) found that raven abundance increased along the Falcon-Gondor powerline corridor in Nevada both during the construction period, and long-term after powerline construction activities had ceased (*see also* Coates et al. 2014). Braun et al. (2002) reported that 40 leks with a power line within 0.25 mile of the lek site had significantly slower population growth rates than unaffected leks, which was attributed to increased raptor predation. Dinkins (2013) documented sage grouse avoidance of powerlines not just during the nesting period but also during early and late brood-rearing. The National Technical Team (2011) recommended that Priority Habitats be managed as exclusion areas for new powerlines. The Gold Rock project violates this proposed standard, and therefore is out of step with the best available science according to BLM experts. Routing

21j The text was revised to acknowledge that Greater Sage-Grouse would also be exposed to noise in foraging/nesting/brood-rearing habitats under some circumstances.

Note that the Northwest Main Access Route Alternative was designed by NDOW and the BLM to use topographic features as noise barriers to minimize impacts on the leks. 2014-2015 noise monitoring for the Pan project show that this design has been successful. In 2014, only one noise exceedance occurred that was unexplainable and was attributed to mine-related activities. In 2015, six exceedances were reported: three were caused by lack of data due to battery failure, and the other three were caused by water truck activities in northeastern region of the Pan Mine. No traffic-related exceedances were reported for either lek. The BLM has clarified the description of noise exceedances for 2014 and noted results of 2015 noise monitoring activities in the FEIS.

As noted in Section 4.9.11 (FEIS Section 4.9.12) , Midway would be required to submit a noise monitoring and mitigation plan subject to BLM approval.

Section 2.5.2 describes two southern access routes that were considered but dismissed from detailed analysis for several reasons:

- Implementation of either alternative would not be consistent with White Pine County's transportation planning goal of maintaining Easy Junior Road as a through-route to Green Springs Road.
- Both alternatives would result in more disturbance due to road construction and widening compare to the proposed county road re-route.

21k The text was revised to include more recent literature in the description of power line impacts to Greater Sage-Grouse. Note that the Northern and Southern Power Line Route alternatives were developed, in part, to substantially reduce impacts to PHMA and GHMA relative to the Proposed Action. Section 4.9.3 discloses the impacts of these "lower-impact routings" as well as the comparative impacts of the Proposed Action power line.

The BLM has added text in section 4.9.3 noting that the East Black Point lek is located within 2 miles of the Proposed Action power line. The BLM has added text to Sections 4.9.4 and 4.9.5 to clarify that these proposed alternative power line routes would not pass through or near any known Greater Sage-Grouse leks.

powerlines through Priority Habitat results in unnecessary or undue degradation under FLPMA through failure to implement lower-impact routings to protect sage grouse habitat.

BLM notes that perch deterrents would be installed on the power line where it passes with 600m of sage grouse habitats. DEIS at 2-13, 2-72. However, proposals to require perch inhibitors offer limited benefit for sage grouse (Prather 2010, Lammers and Collopy 2007). For small lines, a scientific study in Gunnison sage grouse habitat determined that perch deterrents did not significantly reduce raptor use of power lines (Prather 2010). The National Technical Team (2011) recommended burying powerlines in sensitive habitats. BLM removed an alternative to bury the powerline at the proponent's request, not because it was not technically feasible but because the project proponent preferred not to incur the extra expense of such a measure. DEIS at 2-87. Failure to consider in detail the burial of all powerlines associated with the project not only violates NEPA's range of alternatives requirements but more importantly results in a project that imposes unnecessary and undue degradation on sage grouse habitats and their populations, given that alternatives are readily available.

Impacts from Surface Disturbance and Habitat Fragmentation

The various action alternatives involve direct surface disturbance of Preliminary Priority Habitat (PPH) ranging for 8 to 31 acres. DEIS at ES-12. Approximately 3,000 acres of Preliminary General Habitat would be subjected to surface disturbance under each action alternative, with additional impacts from powerlines. DEIS at Table 4.9-5. Wells may also be sited in Preliminary Priority Habitat. DEIS at 4-107. BLM notes that cumulative surface of disturbance in the cumulative effects study area (CESA) between existing, proposed, and reasonably foreseeable impacts totals 3.3% to 3.5% of the CESA. DEIS at 5-59, 5-61. Knick et al. (2013) found that 99% of sage grouse leks in their study area (which includes the Gold Rock project) were surrounded by lands with 3% cumulative surface disturbance or less. In studies attached to our comments, we called the agencies' attention to the findings of Kirol et al. (2012), Copeland et al. (2013), and Knick et al. (2013) which demonstrate the compelling need to limit cumulative surface disturbances to less than 3% of the landscape. The agencies have failed to provide any scientific support for allowing more than 3% surface disturbance. In short, exceedence of this threshold results in extirpation of active sage grouse leks and abandonment of previously suitable habitat. The approval of this project along with current and reasonably foreseeable impacts will cross this threshold for the CESA, transforming the CESA from an area with viable sage grouse populations to an area with extirpated grouse populations. This result is tantamount to undue degradation to the obligate habitats of this BLM Sensitive Species.

Failure to Apply Appropriate Habitat Buffers

BLM's own experts recommended No Surface Occupancy lek buffers of 4 miles (NTT 2011), and local scientists in the Bi-State area recommended lek buffers of 4.66 miles (Coates et al. 2013). In Wyoming, Holloran and Anderson (2005) found that a 5.3-mile buffer encompasses the vast majority of nesting habitat. Other reports and studies (Apa et al. 2008, Aldridge and Boyce 2007) buttress these recommendations. The BLM Ely District itself recommends 600-foot nest buffers for greater sage grouse. DEIS at Appendix 2A. The agency has no way of mapping sage grouse nest sites, and therefore is constrained to rely on the best available science to determine the area around leks (in this case, 5.3 miles) where nests are most likely to occur. Yet the agency is not requiring that high-impact aspects of this project (main haul roads, powerlines), avoid

21k, *cont.*

An alternative to bury the transmission power line was considered and dismissed in Chapter 2 (see Section 2.5.2). A described in that section, reasons for dismissal included:

- Lack of local repair and maintenance support for an underground 69 kV line
- High risk of maintenance problems due to accidental grounding in lightning storms
- Purchase and installation of the system is not economically feasible
- This alternative would require installation of above-ground junction boxes. These junction boxes would be approximately 8 feet wide by 6 feet deep by 4 to 6 feet high and spaced approximately 800 feet apart with securi fences around each junction box for access. The junction boxes and fences could serve as raptor perches and im Greater Sage-Grouse.

Please see response to comment 1p.

The text has been updated to reflect NDOW Comment 1p response.

While burial of 69-kV and higher voltage transmission and distribution lines is problematic, the burial of lower volta distribution lines would pose fewer technical challenges, result in less surface disturbance, and establish fewer above-ground structures and therefore would minimize impacts to soils, vegetation and wildlife. As a result the BLM has identified, and Midway has committed to, mitigation measures involving burial of lower voltage distribution lines.

21l The cumulative impacts analysis was updated to reflect Knick et al.'s (2013) and Copeland et al.'s (2013) research in comparison to cumulative impacts estimated under the Proposed Action and alternatives. However, the BLM also noted th additional research would need to be conducted to verify that the 3 percent threshold may apply to current lek distribution data given that Knick et al.'s study only evaluated data from 1998 to 2007. Also, the text was updated to recognize that th Copeland et al. (2013) study may not be directly applicable to the project.

21m Figure 3.9-6 in section 3.9 shows locations of the power line routes for the Proposed Action and alternatives. None of the proposed power line routes are located near a lek. The closest distance between a lek and proposed power line is 1.6 mile (distance between the East Black Point lek and Proposed Action power line). Two alternatives were developed (the North and Southern power line route alternatives) that would result in an even greater distance (more than 6 miles) between activ leks and the proposed power line.

Figure 3.9-6 also shows the boundary of the Plan area. Surface disturbance would occur within the Plan area; however, th closest lek (active or inactive) is located more than 0.5 mile north of the Plan area boundary. Along the Proposed Action main access route, no direct surface disturbance is proposed outside of the existing right-of-way for the main access route. No surface disturbance is proposed within 0.5 mile of an active or inactive lek under any alternative. This is consistent wi the BLM Ely District RMP, as no above-ground facilities would be constructed within 0.25-mile of Greater Sage-Grouse l and no new roads would be constructed within 0.25-mile of Greater Sage-Grouse leks under any alternative. The closest n construction-type activity to any lek (active or inactive) would potentially be 0.9 miles (distance between inactive Monte Cristo West lek and northernmost Plan boundary) during exploration activities.

The closest new construction to an active lek would be 1.6 miles (between the East Black Point Lek and Proposed Action Power Line). Note that alternatives were developed that would minimize this impact. Under the two power line route alternatives, the closest surface disturbance to an active lek would be approximately 3.6 miles between the northernmost extent of the Plan boundary (where exploration could occur) and the Monte Cristo/Seligman Canyon West lek.

Dr. Coates of the USGS is currently conducting local surveys in the Railroad Valley. These surveys do provide a method f mapping sage grouse nest sites so that the 600-ft buffer can be enforced. Dr. Coates' surveys for the 2013-2014 seasons sh no sage grouse or sign have been observed within the proposed project footprint in the past two seasons. http://pubs.usgs. of/2014/1239/. No nests have been documented within 600 feet of the proposed project footprint during this research (Coa et al. 2015).

these areas by a 600-foot buffer. This is a FLPMA RMP-conformity shortcoming and results in undue degradation to sage grouse habitats and populations.

Failure to undertake a legally sound cumulative effects analysis

While the BLM does list the mileages and acreages of some existing roads, powerlines, and disturbances that also affect sage grouse in and near the project area, it makes no effort to estimate the overall cumulative effect of the Gold Rock project together with these disturbances on sage grouse populations. *See* DEIS at 5-52. What are the present lek population trends for leks affected by the project (important baseline information), and how will these population trends change under different alternatives given the cumulative effects of this project together with existing disturbances? This is the key question that NEPA intends the cumulative impacts analysis to answer, and yet BLM has failed even to guess at the possible magnitude of cumulative impacts to individual lek populations. What the DEIS provides is a mere listing of factors that cumulative affect grouse together with the project, coupled with vague qualitative statements that these will cumulatively have negative effects on sage grouse populations. *Id., and see* 5-55. This failure to provide specificity violates NEPA's cumulative impacts analysis requirements.

Railroad Valley Springfish

The Railroad Valley springfish, a threatened species under the ESA, is dependent on thermal springs, several of which may be hydrologically connected to groundwater underlying the project area. DEIS at 3-78. BLM argues that groundwater drawdown in the project area would have no effect on this species. DEIS at 4-70. The project will include a heap leach pad (DEIS at ES-3) that poses a significant groundwater contamination hazard. Despite this potentially serious source of toxic groundwater contamination, BLM analysis of impacts to springfish addressed groundwater withdrawal only, not the potential for toxic levels of contamination. This is a NEPA hard look failing.

BLM did make some calculations outside the context of the Railroad Valley springfish indicating that groundwater in this area migrates at a rate of 7 feet per day, such that contamination in the project area would reach the springs in question in about 20 years. DEIS at 4-4. The BLM does assert that the project proponent would monitor groundwater contamination (*id.*), but of course in cases where groundwater contamination does occur, the project proponent will be powerless to clean it up once it has polluted aquifers far underground. We are therefore concerned that undue degradation to springfish habitat will occur as a result of groundwater contamination.

Conclusions

Major changes beyond those proposed in any action alternative will be required in order to approve the Gold Rock project without violating FLPMA's unnecessary or undue degradation standards. These changes include the following:

- Routing haul roads and powerlines completely away from sage grouse Preliminary Priority Habitats;

21n Greater Sage-Grouse population trend data for trend leks from NDOW were added to Chapter 5 and described in tha section.

The text was revised to note that the trend from 2005 to 2015 in the CESA is increasing, but the current disturbance below the 3 percent threshold suggested by Knick et al. 2013. Text was revised to note that adding quantified RFFA o past and present disturbances raises the disturbance to 3.3 percent of the CESA and adding RFFAs and the Gold Roc Project to the past and present disturbances would surpass the 3 percent impact threshold, at least for activities that c be quantified. The text was revised to acknowledge that if the 3 percent impact threshold is surpassed, this could lea o a downward trend for Greater Sage-Grouse in the CESA based on the Knick et al. (2013) study, though additional research is warranted to confirm the 3 percent threshold suggested by Knick et al. (2013) given that their study only evaluated lek data from 1998 to 2007.

21o The BLM has revised text in water resource sections 3.2 and 4.2.3, noting that Big Warm and Little Warm springsoriginate from a different, deeper aquifer than the aquifer in which the Easy Junior well is screened.

The Proposed Action is based on Midway's Gold Rock Mine Project Plan of Operations and Reclamation Permit Application (Midway 2013a, which includes design measures protective of the environment such as a lined heap leac pad and tailings storage facility, leak detection systems at these facilities, and a groundwater quality monitoring program, in accordance with Nevada Revised Statutes and NDEP permit requirements.

Text in Section 4.2.3 states that any potential surface contamination during construction would have to travel approximately 1,200 feet to reach groundwater. Text has been added to clarify that when the pit is at its ultimate dep contamination would have to travel more than 400 feet to reach groundwater. Text in this section also indicates that y contamination would be attenuated prior to reaching groundwater. Furthermore, the groundwater monitoring plan is intended to provide early warning so that any impacts can be addressed prior to impacts reaching water resources. Tl Text has been revised to provide more detail regarding infiltration and attenuation processes.

The analysis of impacts to the Railroad Valley springfish in wildlife resource Section 4.9 was revised to describe potential impacts to both water quantity and quality, consistent with the water resources section.

21p The NEPA process involves disclosure of impacts and mitigation of impacts.

Text in Section 1.8 refers to the General Mining Law of 1872, under which qualified prospectors are entitled to reasonable access to mineral deposits on public domain lands that have not been withdrawn from mineral entry. Tex n Section 1.8 also notes that in accordance with Section 202 of FLPMA, the Proposed Action and alternatives are in conformance with the approved Ely Proposed Resource Management Plan and Final Environmental Impact Statemen (BLM 2007e and the Ely District Record of Decision and Approved Resource Management Plan (BLM 2008b and th Greater Sage-Grouse Land Use Plan Amendment (BLM 2015b).

Text in Section 1.9 notes that the BLM has determined that submittal of the Plan triggers the environmental analysis process under NEPA. The BLM also determined that the proposed mining project constitutes a major Federal action, and determined that an EIS was required to assess the potential environmental, social, and economic effects of the proposed project and associated facilities. This EIS was prepared in conformance with NEPA through BLM regulatio guidance, and policy. The BLM EFO evaluated consistency of the proposed mining activities with existing BLM Resource Management Plans, along with relevant plans from other agencies. In compliance with NEPA, a Proposed Action, No Action Alternative, and a reasonable range of Action Alternatives was developed.

Text in Section 2.3 describes the Proposed Action including spill prevention, monitoring, and an adaptive managemer plan for waste rock management that would be implemented under the Proposed Action and alternatives to minimize e risk of impacts to resources, including groundwater.

Text in Section 2.4 describes alternatives developed in an effort to minimize potential impacts to Greater Sage-Grous and Greater Sage-Grouse habitat, as well as to mule deer crucial winter range.

Section 3.9 describes existing conditions for wildlife including Greater Sage-Grouse. Section 4.9.3 discloses impacts and identifies mitigation measures regarding wildlife, including Greater Sage-Grouse.

Text in Section 3.2 in subsections Existing Conditions, Precipitation (now "Climate", Surface Water, Groundwater, and Water Quality has been revised to incorporate additional baseline hydrogeologic information collected in November 2014. Additional impact analysis based on this information has been added in Section 4.2.3.

- Burying powerline segments that are within 0.6 mile of any sage grouse habitats;
- Eliminating heap-leach extraction procedures from the proposed project to prevent groundwater contamination.

BLM must also remedy procedural failings under NEPA to provide adequate baseline information and direct and cumulative impacts analysis. Please mail us a hardcopy of the Final EIS for this project to the address listed on page one of these comments.

Respectfully yours.

Erik Molvar

Attachments: cited literature on CD-ROM

Literature Cited

Aldridge, C.L., and M.S. Boyce. 2007. Linking occurrences and fitness to persistence: A habitat-based approach for endangered greater sage-grouse. Ecol. Appl. 17:508-526.

Apa, T., J. Bohne, T. Christiansen, J. Herbert, B. James, R. Northrup, D. Olsen, A. Robinson, P. Schnurr, T.O. Smith, and B. Walker. 2008. Using the Best Available Science to Coordinate Conservation Actions that Benefit Greater Sage-Grouse Across States Affected by Oil & Gas Development in Management Zones I-II (Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming). Unpublished multi-state report of game and fish agencies, 10 pp. Online at http://www.ourpubliclands.org/files/upload/ti-State_ScienceGroupDocument_FINAL_01-28-08.pdf.

Blickley, J. L. and Patricelli, G. L. 2010. Impacts of Anthropogenic Noise on Wildlife: Research Priorities for the Development of Standards and Mitigation. Journal of International Wildlife Law & Policy, 13: 4, 274 — 292. http://dx.doi.org/10.1080/13880292.2010.524564.

Blickley, J.L., and G.L. Patricelli. 2012. Potential acoustic masking of greater sage-grouse (*Centrocercus urophasianus*) display components by chronic industrial noise. Ornith. Monogr. 74: 23-35.

Blickley, J.L., D. Blackwood, and G.L. Patricelli. 2012a. Experimental Evidence for the Effects of Chronic Anthropogenic Noise on Abundance of Greater Sage-Grouse at Leks. Conserv. Biol. 26:461-471.

Blickley J.L., Word K.R., Krakauer A.H., Phillips J.L., Sells S.N., et al. 2012b. Experimental Chronic Noise Is Related to Elevated Fecal Corticosteroid Metabolites in Lekking Male Greater

21p, *cont.* Text in Chapter 5 describes cumulative impacts and potential cumulative impacts identified durin the cumulative effects analysis.

21q The BLM will mail a hard copy of the FEIS to Wild Earth Guardians at the mailing address listed on page one of the comment letter.

Sage-Grouse (*Centrocercus urophasianus*). PLoS ONE 7(11): e50462. doi:10.1371/journal.pone.0050462.

Braun, C.E. 1986. Changes in sage grouse lek counts with advent of surface coal mining. Proc. Issues and Technology in the Management of Impacted Western Wildlife, Thorne Ecol. Inst. 2:227-231.

Braun, C.E., O.O. Oedekoven, and C.L. Aldridge. 2002. Oil and gas development in western North America: effects on sagebrush steppe avifauna with particular emphasis on sage grouse. In Transactions North American Wildlife and Natural Resources Conference 67:337-349.

Coates, P.S., M.L. Casazza, E.J. Blomberg, S.C. Gardner, S.P. Espinoza, J.L. Yee, L. Wiechman, and B.L. Halstead. 2013. Evaluating greater sage-grouse seasonal space use relative to leks: Implications for surface use designations in sagebrush ecosystems. J. Wildl. Manage. 71:1598-1609.

Coates, P.S., K.B. Howe, M.L. Casazza, and D.J. Delahanty. 2014. Common raven occurrence in relation to energy transmission line corridors transiting human-altered sagebrush steppe. J. Arid Env. 111:68-78.

Copeland, H.E., A. Pocewicz, D.E. Naugle, T. Griffiths, D. Keinath, J. Evans, and J. Platt. 2013. Measuring the effectiveness of conservation: A novel framework to quantify benefits of sage-grouse conservation policy and easements in Wyoming. PlosONE 8: e67261. 14 pp.

Dinkins, J. B., 2013. Common raven density and greater sage-grouse nesting success in southern Wyoming: Potential conservation and management implications. PhD Dissertation, Utah State Univ. http://digitalcommons.usu.edu/etd/1700.

Holloran, M. J. 2005. Greater sage-grouse (*Centrocercus urophasianus*) population response to natural gas field development in western Wyoming. PhD Dissertation. University of Wyoming. Laramie, Wyoming.

Holloran, M. J. and S. H. Anderson. 2005. Spatial distribution of Greater Sage-grouse nests in relatively contiguous sagebrush habitats. Condor 107(4): 742-752.

Kirol, C.P., J.L. Beck, J.B. Dinkins, and M.L. Conover. 2012. Microhabitat selection for nesting and brood-rearing by the greater sage-grouse in xeric big sagebrush. Condor 114: 75-89.

Knick, S.T., S.E. Hanser, and K.L. Preston. 2013. Modeling ecological minimum requirements for distribution of greater sage-grouse leks – Implications for population connectivity across their western range, USA. Ecology and Evolution 3: 1539-1551.

Lammers, W.M., and M.W. Collopy. 2007. Effectiveness of avian predator perch deterrents on electric transmission lines. J. Wildl. Manage. 71: 2752-2758.

Manier, D.J., Bowen, Z.H., Brooks, M.L., Casazza, M.L., Coates, P.S., Deibert, P.A., Hanser, S.E., and Johnson, D.H., 2014. Conservation buffer distance estimates for Greater Sage-

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Grouse—A review: U.S. Geological Survey Open-File Report 2014–1239, 14 p., http://dx.doi.org/10.3133/ofr20141239.

(NTT) Sage-grouse National Technical Team. 2011. A Report on National Greater Sage-grouse Conservation Measures. Available at www.blm.gov/pgdata/etc/medialib/blm/co/programs/wildlife.Par.73607.File.dat/GrSG%20Tech%20Team%20Report.pdf.

Nonne, D., E. Blomberg, and J. Sedinger. 2011. Dynamics of greater sage-grouse (*Centrocercus urophasianus*) populations in response to transmission lines in central Nevada. Progress Report: Year 9. Unpublished report, 55 pp.

Patricelli, G.L., J.L. Blickley, and S.L. Hooper. 2012. The impacts of noise on greater sage-grouse: A discussion of current management strategies in Wyoming with recommendations for further research and interim protections. Unpubl. Report prepared for: The Bureau of Land Management, Lander Field Office and Wyoming State Office, Cheyenne and Wyoming Game and Fish Department, 25 pp.

Patricelli, G.L., J.L. Blickley, and S.L. Hooper. 2013. Recommended management strategies to limit anthropogenic noise impacts on greater sage-grouse in Wyoming. Human-Wildlife Interactions 7:230-249.

Piquette, D., A. Keck, N. Seward, B.P. Magee, P.A. Magee, and G. Patricelli. 2014. Acoustic soundscapes in the Gunnison Basin and effects of anthropogenic noise on Gunnison sage-grouse (*Centrocercus minimus*) in the Gunnison Basin, Colorado. Final Report submitted to Colorado Parks and Wildlife, 27 pp.

Prather, P.R. 2010. Factors affecting Gunnison sage-grouse (*Centrocercus minimus*) conservation in San Juan County, Utah. PhD Dissertation, Utah State Univ., 134 pp.

Remington, T.E., and C.E. Braun. 1991. How surface coal mining affects sage grouse, North Park, Colorado. Proc. Issues and Technology in the Management of Impacted Western Wildlife. Thorne Ecol. Inst. 5:128-132.

Rothenmaier, D. 1979. Sage-grouse reproductive ecology: breeding season movements, strutting ground attendance and site characteristics, and nesting. M.S. Thesis, Univ. Wyoming, Laramie.

Wisdom, M.J., C.W. Meinke, S.T. Knick, and M.A. Schroeder. 2011. Factors associated with extirpation of sage-grouse. Studies in Avian Biology 38:451–472.

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MIDWAY GOLD

CORPORATE HEADQUARTERS
8310 S Valley Highway, Suite 280, Englewood, CO 80112
720.979.0900

BUILDING BUSINESS IN NEVADA

March 30, 2015

Mr. Dan Netcher
U.S. Bureau of Land Management
702 N. Industrial Way
HC 33 Box 33500
Ely, NV 89301

RE: COMMENTS ON THE PROPOSED GOLD ROCK MINE ENVIRONMENTAL IMPACT STATEMENT

Dear Mr. Netcher:

Midway Gold would like to acknowledge the effort that the BLM has invested in drafting this environmental impact statement for our proposed Gold Rock Mine. The process provides an opportunity to review our mine plan and to improve it based on community and stakeholder comments and suggestions. We feel that this can make for a stronger mine plan which is supportive of the whole community and addresses as many foreseen and unforeseen environmental impacts as possible, either through prevention or mitigation.

In the interest of accuracy and moving forward responsibly, we submit the following comments.

Chapter 3

Affected Environment (Section 3.18)
The reference to SJR 15 should be updated to note that the ballot measure failed. As a result it appears no significant changes to the net proceeds of mines tax will be made although some modification could result in the current legislative session. (p. 3-154, last para)

Chapter 4

Groundwater (Section 4.2.3)
The first paragraph indicates that we would use less water during construction than during operations. Based on our experience at Pan, we now believe we would most likely use more water during construction as wetting of the heap and pond filling would start before construction is finished. (Pg 4-4)

Surface water (Section 4.2.3)
The statement about attenuation needs a reference and should be reworded for clarity. Please see the InterraLogic baseline study for a discussion on the attenuation. (Pg 4-6, 3rd para, 4th-5th lines)

The discussion on water accumulating in the pit bottom should be qualified to reflect the past 36 years' experience. Insert "on occasion and remain for a short period of time." after pit bottom. (Pg 4-7, 3rd para, 3rd line)

RESPONSES TO LETTER 22

22a Text in Section 3.18 has been revised, deleting information on SJR 15.

22b The BLM revised Section 2.3.1, noting that up to approximately 1,105 gpm would be used during construction. Text in Section 4.2.3 has been revised to note that approximately the same rate of water use would be required during construction and operations.

22c The text was revised per the comment to describe water balance processes and hydrogeologic characteristics (lack of infiltration, no connection to regional aquifers) described in the baseline hydrogeology report (Hatch 2015) and indicate that no migration is anticipated to occur.

22d The text was revised, noting that no accumulation of water in the pit bottom has been observed. The BLM also added text describing local conditions of low rainfall and high evapotranspiration that do not support the formation of a pit lake.

Note in the discussion of acid generation, that the Easy Junior pit and the existing waste rock pile have been in place for more than 36 years, and no impacts have yet been detected. (Pg 4-7, 4th para, last line)

Additional Monitoring and Mitigation (Section 4.2.11)
It could be very misleading to the reader to leave the statement here that "no mitigation is required." While it may be true that no additional monitoring is required, mitigation is provided for relative to water resources and should be referenced here if this section remains in the document. (pg 4-10)

Geology and Minerals--Northwest Main Access Route Alternative, Northern Power Line Route (Section 4.3.6)
Use care when using "greater" to describe acreage. Greater is used in most discussions of the alternatives and it is misleading. It could indicate that the acres of disturbance are of "greater" importance than other acres, instead of just "more" acres of the same type. Replace "greater" with "more" throughout this chapter. For example, see: (Pg 4-15, 3rd para, 1st line) (pg 4-15, last para, 1st line; same as above). (Pg 4-46, 4th para, 1st sentence)

Vegetation--Northwest Main Access Route Alternative, Northern Power Line Route (Section 4.8.6)
The Proposed Action access road (Green Springs Road) probably would have to be widened and smoothed, within the existing ROW, to allow larger equipment and trucks through if used as the primary access road. (Pg 4-46, 3rd para, Last sentence)

Table 4.8-5
"Table 4.8-5 presents areas of disturbance within vegetation types for the Proposed Action and the Northwest Main Access Route, Northern Power Line."
Please identify the column on the Table that represents the Proposed Action by labeling it such so that the reader can make the comparison of disturbed acreage caused by the alternatives in context of the disturbance related to the Proposed Action. (Pg 4-46; 4th para, Last sentence, and Pg. 4-47 for the Table)

Wildlife Resources (Section 4.9)
Indicators (Section 4.9.2)
Replace "would" with "could" in reference to impacts to wildlife from collisions with vehicles and project infrastructure given that recent experience at Pan has not supported this conclusion that these activities "would" subject the wildlife to mortality from collision. (p.4-55, 2nd para)

Figure 4.9-1 displays Mule Deer Crucial Winter Range, but it is not clear what this designation is based on or if it is still correct. Conversations with Mike Podbourny previously indicated that mule deer have not used this area for more than ten years.
This should be based on the real world site-specific data instead of this map. Please identify the source of information for the data reflected in this map.

At the same time, "year-round" mule deer range, which is listed on Table 4.9-1, is not shown on Figure 4.9-1.

22e The BLM added text to Section 1.2 Project History clarifying that in 2004 acidic discharge was observed seeping from the toe of the Easy Junior WRDA. This discharge continued for six months, stopped, and has not been observed in the past 10 years.

22f The text in section 4.2.11 (FEIS Section 4.2.12) has been revised to clarify that a groundwater monitoring plan is included in the Plan as Appendix B, and is summarized in section 2.3.12 of the EIS, in the subsection "Monitoring Wells".

22g The text in chapter 4 was revised, replacing "greater acres" with "more" acres.

22h The text in Section 2.3.2, 4.8.6 and 4.8.7 was revised, adding text shown in bold below: "...no new surface disturbance **outside of the existing county road right-of-way** would be required during road maintenance activities."

In Section 2.3.2, the following text was added: "In its road use agreement with White Pine County, Midway would commit to perform road-widening activities outside of the Greater Sage-Grouse breeding season to minimize potential impacts to Greater Sage-Grouse."

22i Table 4.8-5 does not present the area of disturbance for the Proposed Action. The cited text and similar text under the Northwest Main Access Route Alternative, Southern Power Line Route was corrected, deleting reference to the Proposed Action.

22j The text was revised per the comment.

22k The BLM has added notes to figures in sections 3.9 and 4.9 indicating the source of mapping (big game ranges are based on NDOW GIS layers; Greater Sage-Grouse habitat categories are based on USGS GIS layers). Figure 3.9-2 shows NDOW mapping for mule deer year-round, winter, and crucial summer range, along with crucial winter range. Figure 3.9-2 also shows NDOW telemetry data indicating Area 10 mule deer movement. Additional text has been added to Section 3.9 to more thoroughly describe the movement patterns evident in the NDOW telemetry data, including the years of data collection. The BLM has revised Figure 4.9-1, showing the two mule deer ranges that overlap the Plan area: year-round range and crucial winter range. The figure also shows available Area 10 mule deer telemetry data.

Provide a citation for or consider a more balanced approach regarding the statement "human activity and noise during construction may influence mule deer and pronghorn antelope to temporarily avoid the Plan area." This assertion is not a universal observation. Noise and human activity often attract antelope and deer. (Pg 4-60, 1st line)

Like the studies used for noise-related impacts to sage-grouse, studies related to oil and gas referenced here likely have little to no relevance to mining's potential impacts (see 2nd comment below under Section 5.11.6). Delete or edit to explain the limitations and hazards of using information gathered for one purpose that may or may not be relevant to mining operations. Midway also prefers, consistent with relevant policy on Data Quality and hierarchy, the use of studies that are based on Nevada populations, preferably studies near the site where conditions can be anticipated to be more similar to the study areas documented. (Pg 4-60 1st para after Table 4.9-2, 5th line)

Please explain how mule deer would be displaced over a wider area than the immediate foot print of the mine. Provide a citation that supports this assertion. It is far more likely that the water on site would attract deer as it has at Pan and not cause displacement. Again, we believe under guiding principles of data hierarchy, site specific information should take precedence over generalities particularly where important distinctions exist relative to the data and potential impacts identified. (Pg 4-60 2nd para after Table 4.9-2, last sentence)

Migratory Birds Except Eagles (Section 4.9.3)

The last sentence of the third paragraph asserts: "Traffic and construction noise during construction could affect bird populations in a number of ways."

Our recent experience at Pan is different. It would be appropriate, at a minimum, to add "However, no effect has been detected at Pan during the first year of construction and operations." (Pg 4-62, 3rd para, last sentence)

It is critical to note here that while birds may be displaced due to noise, they likely relocate given there is plenty of suitable habitat surrounding the site; abandoned leks are documented to occur even without introduced noise and may be influenced by other factors such as drought (correlation is not causation). It also is important to note the existence of leks in close proximity (less than 1 mile) to Highway 50 (and numerous long-existing county roads throughout the Newark Valley) which suggests the birds do not abandon leks simply due to noise. (Pg 4-63, 1st para)

Coates' studies in this area are documenting high concentrations of ravens and predation in nesting areas that could have a much greater impact on nesting success than mine-related noise (see Coates' annual data summaries and Blombert et al. 2013: "Intraseasonal variation in survival and probable causes of mortality in greater sage-grouse Centrocercus urophasianus") . Further, current site-specific modeling near the leks at Pan do not yield significant noise sources in the 40-60 dBA range cited here. Please also see Barber et al. 2010 for a science-based analysis of potential impacts of noise on birds, and the contradictory studies that need to be resolved to provide a scientific basis on which to regulate noise in sensitive areas. Some studies (cited in Barber et al. 2010) show less predation when predators are confused by noise at certain levels. (Pg 4-63, end of 2nd para)

If the BLM determines that the activities could result in takings, the construction activities could be stopped immediately."

22l The BLM revised text to: "Increased human activity and noise during construction may influence mule deer and pronghorn to temporarily avoid portions of the Plan area that are subject to disturbance. Mule deer and pronghorn that are not habituated to human presence, and especially populations that are hunted, will startle and flee when approached by humans or vehicles (Freddy et al. 1986; Stankowich 2008). In doing so, animals expend energy that could otherwise be used for activities such as feeding, grooming, and breeding. Ungulates tend to perceive humans on foot with greater wariness than vehicles (Freddy et al. 1986; Stankowich 2008). Over time, big game may habituate to human presence if consistently encountering humans in a non-threatening context (Stankowich 2008). Thus, during the construction phase, deer and pronghorn may initially avoid areas close to human activity especially if humans on foot are present; however, this effect may become less pronounced over time as animals habituate.

"Blum et al. (2015) studied habitat use by radio-collared mule deer in and around the Bald Mountain Gold Mine. The Bald Mountain Mine is in a migration corridor for the same mule deer herd that uses the Gold Rock Plan area. The study at the Bald Mountain mine found that deer avoided the areas of the mine that were subject to the heaviest levels of disturbance (i.e., open pits, heap leach facilities, rock disposal areas) but did use intact patches of habitats adjacent to these features. Because the types of facilities at Gold Rock would be very similar to those at the Bald Mountain Mine, mule deer would likely exhibit a similar pattern of use under the Proposed Action and continue to use intact habitats adjacent to the mine facilities."

22m The BLM deleted references to oil and gas studies and focused instead on deer behaviors when approached by humans and the 2015 study at the Bald Mountain Mine. Please see response to comment 22l.

22n Please see response to comment 22l.

22o In lieu of scientific studies that provide evidence that bird populations have not been affected at Pan, we cannot include the statement "However, no effect has been detected at Pan during the first year of construction and operations." Should these studies become available, the text will be updated accordingly.

22p It is not appropriate to state that wildlife will simply relocate to surrounding habitat because doing so could potentially increase competition for resources with other wildlife. We acknowledge that Greater Sage-Grouse can abandon leks for reasons other than noise; however, best available science, as cited in the EIS, suggests that human disturbances and associated noise contribute to chronic stress in Greater Sage-Grouse and play a factor in declining lek attendance.

It is true that there are active leks near existing roads such as highway 50. However, it is unlikely that much traffic occurs along existing roads in the early morning hours during peak lek attendance. It is also possible that the local Greater Sage-Grouse population has habituated to the presence of Highway 50, which has existed since 1926. It is also possible that baseline levels of traffic on the existing roads *do* stress the grouse, but not the point of lek abandonment. In any case, mine traffic under the Proposed Action or alternatives would be a new, sustained noise that would raise noise levels above baseline. Based on the peer-reviewed research of Blickley et. al (2012) on effects of road noise in Wyoming, it therefore has the potential to induce a stress response and contribute to declines in lek attendance.

22q Information on major Greater Sage-Grouse mortality sources, as described in the Coates' et al. studies and Blomberg et al. 2013, was added to Chapter 3, Section 3.9.

The Barber et al. (2010) paper was reviewed. It provides a broad review of noise impacts on wildlife and doesn't mention Greater Sage-Grouse-raven interactions specifically, so it may not be directly applicable to these species. The paper concludes that: "Taken collectively, the preponderance of evidence argues for immediate action to manage noise in protected natural areas" which is suggestive that the overall impact of anthropogenic noise is negative. This is consistent with the impact analysis in the DEIS.

This mitigative measure (if the activities were stopped in mid-course) would have significant negative impact on the construction and mining operations and may not have any beneficial effect relative to the birds. Midway is supportive of identifying actual impacts and the causation of such impacts in order to provide effective mitigation (and, where feasible, avoidance) of the same.

2r As noted, surveys would be done prior to the beginning of construction and alternative mitigation should be considered given the significant negative impact an immediate interruption of construction would have mid-course. Simply halting construction mid-course would unreasonably interfere with Midway's rights under Federal law including, but not limited to the 1872 Mining Law and FLPMA. Alternative mitigation should alleviate the necessity to suggest such possible severe, broad, and disruptive regulatory action. (Pg 4-63, 5th para; and 4-72, Last para).

In the paragraph referencing the APLIC avian deterring measures in "PPH or PGH", clarify why these measures would be applied only in sage-grouse habitat (PPH or PGH) given that raptors 22 could be electrocuted anywhere along the power line where raptor nests occur. Should "PPH or PGH" be replaced with "in land sections with documented raptor nests"? (Pg 4-64, 2nd para, 2nd line)

Greater Sage Grouse (Section 4.9.3)

It should be mentioned here that in two years of Dr. Coates' study he has never had a tracked 22 sage grouse enter the proposed mine site. Further, Dr. Juncosa's baseline studies, which included hundreds of miles of transects, never identified sage grouse or any evidence of their sign. The statement here should be qualified to only apply to the Proposed Action access road. (Pg 4-64)

21 Baseline noise studies are planned for 2016. Replace "2015" with "2016." (Pg 4-65, 1st para after Table 4.9-3, 3rd line) and (Pg 4-66, 3rd line of 1st para)

2J It is irrelevant that there is no data yet, making the introductory phrase "In the absence of site specific information," misleading to the reader. Please delete this statement. (Pg 4-66, 2nd para, 1st line)

While collisions with vehicles are of course possible, it is important to mention in this paragraph if Dr. Coates has ever identified a mortality due to collision in the proposed mine area. Previous 2N published research by Coates' team in the Eureka, Nevada area (Blomberg, et al. 2013) indicate that of all mortalities studied (87) only three were attributed to any cause other than predation and none were attributed to automobile collisions. Again, Midway seeks to identify causation of actual impacts in order to provide effective mitigation. (Pg 4-68, 5th para).

The discussion here on roads and their impacts on sage-grouse should be reconsidered -- birds do not "use human-built features (e.g., roads) to aid their movement into otherwise undeveloped sagebrush habitat". Please verify that the Bui et al. 2010 citation is applicable here (the BioOne 2[illegible] abstract discusses raven populations increasing near anthropogenic disturbances and the effects of predation, not sage grouse exploitation of human structures). Dr. Coates' study which documents ravens concentrated at the lek sites during the strutting season could also be cited to document the source of predation threat at site. (Pg 4-69, last para and Pg 4-70, first para)

22r The BLM revised text in Section 4.9.3 to state: "To minimize potential impacts on raptors, Midway would have a qualified biologist conduct at least two pre-construction breeding-season raptor nest surveys per year - one in March and one in May, for each year when construction activity was planned to occur between May 1 and July 15. These surveys would take place within potential raptor nesting habitat in and within 0.5 mile of the area to be disturbed. If active raptor nests were found, a 0.5-mile buffer would be applied for avoidance of construction activity between May 1 and July 15. Where a 0.5-mile raptor nest buffer was not feasible, Midway would coordinate with the USFWS, NDOW, and BLM on a case by case basis to develop appropriate protective measures for breeding raptors.

Similar text was added to Table 2.3-8 for consistency. Text was also added to Table 2.3-8 noting that if appropriate Midway would implement a USFWS-approved bird and bat conservation strategy (BBCS) similar to the BBCS developed for the Pan Mine, along with an eagle conservation plan, if required. If appropriate and required by USFWS, Midway would obtain a nest removal permit.

22s The BLM added text to clarify that Mount Wheeler Power would use APLIC design measures or best available technology in PLSS sections with documented raptor nests to minimize electrocutions and collisions.

22t The text in Section 4.9.3 has been updated to remind readers that no Greater Sage-Grouse have been observed inside the Plan area during baseline studies or the ongoing USGS study (EcoSynthesis and WRC 2012 a, b, 2013; Coates et al. 201 Andrle and Coates 2014; Coates et al. 2015), and that Coates et al. (2015) indicate that Greater Sage-Grouse currently us leks near the Plan area, but generally stay in the vicinity of these leks during the spring, summer, and fall and use habitat to the north and east. Therefore, the impacts analysis applies to those leks, which are located outside the project area. Th BLM also noted that direct mortality would likely be limited to the proposed main access route and transmission line ROW.

22u The BLM has revised the text to state: "Noise monitoring would be performed one year prior to the start of construction."

22v The text has been revised to: "Because site specific data have not yet been collected…"

22w The text cites Blomberg et al. (2013) and confirms that vehicle collisions have not been a notable cause of mortality in Eureka County. We added text to explain that Coates et al. have also not identified any mortalities due to collisions in the area.

22x The EIS text states that the Bui et al. study found that ravens (not Greater Sage-Grouse) use human built structures. The text was revised to: "In a study of raven habitat use with respect to Greater Sage-Grouse occupancy near Pinedale, Wyoming, Bui et al. (2010) determined that ravens may use human-built features (e.g., roads) to aid their movement into otherwise undeveloped sagebrush habitat. In that study, ravens were observed flying along the road network (potentially searching for prey or roadkill) and using anthropogenic structures for nesting, especially in otherwise undeveloped habitat" to clarify the mechanism by which human built structures may augment raven use of an area (i.e., for prey/ roadkill sources along roads and nesting substrates).

Special Status Raptors (Section 4.9.3)
One mitigative measure identified is the potential for the BLM to determine that construction activities "***could*** result in takings" of migratory birds or special status raptors and as a result "the construction activities could be stopped immediately." We believe that the EIS should indicate that this mitigative measure (if the activities were stopped in mid-course) would have significant negative impact on the construction and mining operations. 2y

Mitigation Special Status Wildlife – Sage Grouse (Section 4.9.11)
Midway would coordinate with BLM and NDOW to attempt to differentiate between travelers on the access road resulting from the mine versus other traffic, however, there may be significant practical and logistical challenges to doing so. Noise monitoring has come up because of the closeness of the leks to the access road. Accordingly, Midway prefers the Northwest Main Access Route Alternative, Southern Power Line Route to the Proposed Action access road route so that the road is further from the leks and to reduce the need for additional noise monitoring. (Pg 4-106, first bullet, last sentence) 2z

Please note that Midway is not signatory to the "MOU between the mining industry and the BLM (Partnership for the Conservation and Protection of the Greater Sage-Grouse and Greater Sage-Grouse Habitat)". (Pg 4-107, first para, next to last sentence)

Mitigation, Big Game (Section 4.9.11)
The fence in this area is intended to preclude people from getting too close to blasting activities in the pit area. The proposed 3-strand barbed wire fence will not preclude big game such as mule deer or antelope from entering, grazing in, or traveling through this area. Midway has no objections to moving this fence to a "technically safe and secure distance of proposed mine facilities," as stated in the mitigation measure, however, this distance should be a minimum of approximately 1,000 feet from the facilities given safety needs and regulations. (Pg 108, bullet) 2aa

Additional Monitoring and Mitigation (Section 4.10.11)
Following publication of the DEIS, we learned at the Eureka public meeting on the DEIS, of grazing animals described by the Little Paris Sheep Company and their concern that the mine activities may block movements of grazing animals from south to north or north to south. Midway would work in good faith with grazing companies to address concerns in attempt to ensure free movement of grazing animals past the mine. (Pg 4-114) 2ab

Forest Products and Fuels (Section 4.11.3)
In discussing vegetation, it should be noted that there are very few pinyon pine in the pinyon/juniper vegetation types on site due to the Carbonari having selectively cut all of them at the turn of the century. (Pg 4-116, 2nd para) 2ac
Also section 4.14.3 (Pg 4-128, 1st para) Same as above.

Land Use Authorization and Use (Section 4.15.3)
Construction
"With implementation of the Applicant-Committed EPMs described in Table 2.3-8, the risk of accidents on public roads would be similar to current conditions and an accident resulting in a release to the environment is not anticipated." 2ad
Replace "not anticipated" with "of low probability." We have anticipated this and planned for it. (Pg 4-131, 6th para, last sentence)

22y The text has been revised: "To minimize potential impacts on special status raptors, Midway would have a qualified biologist conduct at least two pre-construction breeding-season raptor nest surveys per year - one in March and one in May, for each year when construction activity was planned to occur between May 1 and July 15. These surveys would take place within potential raptor nesting habitat in and within 0.5 mile of the area to be disturbed. If active raptor nests were found, a 0.5-mile buffer would be applied for avoidance of construction activity between May 1 and July 15. Where a 0.5-mile raptor nest buffer was not feasible, Midway would coordinate with the USFWS, NDOW, and BLM on a case by case basis to develop appropriate protective measures for breeding raptors."

Similar text in Table 2.3-8 has been revised for consistency.

22z The BLM added text to Section 4.9.11 (FEIS Section 4.9.12) noting that Midway would coordinate with BLM and NDOW to attempt to differentiate between mine-related travel and other travel on the proposed main access route, if practical. See comment 1t.

22aa The BLM has revised Midway's Applicant-Committed Measure in Table 2.3-8 to state:

"Construct fence according to BLM specifications along the perimeter of the mine area consistent with GRSG LUPA MD SSS 11 (Appendix 1A)."

22ab Please see response to comment 18a.

22ac The BLM has added text to Sections 3.11 and 4.11.3 noting that few pinyon-pine remain in the pinyon-juniper woodlands due to selective harvesting by the Carbonari in the late 1800s (Giambastiani 2013).

22ad The text has been clarified as suggested. In addition the BLM added text to Section 4.15.3 noting that the potential for hazardous materials or other wastes to spill and subsequently affect land use would be minimized through design measures described in Section 2.3 including but not limited to lining the heap leach and tailings storage facilities; installing leak detection systems at these two facilities; sealing of the process plant floor slabs, floor sumps, and walls; secondary containment of process plant tanks, establishment of containment areas, construction of berms upgradient of facilities to prevent run-on, and installation of other stormwater control measures.

Text was also added noting that the potential for spills to occur and affect land use would be minimized through implementation of spill containment, control, and cleanup measures and reporting procedures noted in the Spill Contingency and Emergency Response Plan (Midway 2013a) and containment systems and procedures for monitoring and controlling process solutions in the fluid management and monitoring plan that Midway would prepare as part of the Water Pollution Control Permit application process.

Socioeconomic Resources (Section 4.18.1)
Table 4.18-1
2ae The asterisk for the foot note is not shown below the table. (Pg 4-148)

Indicators (Section 4.18.2)
2af Add "Socioeconomic impact related to" before "Recreational use…" This is covered in section 4.17 and seems redundant here, but if qualified, is OK. (Pg 4-148, second bullet)

Economic Impacts (Section 4.18.3)
Construction
2ag Note that actual construction costs at Pan are now closer to $100 million than $70 million. (Pg 4-150, 3rd para, 2nd line)

The paragraph on TSF failure seems out of place here, and in other places where it shows up in this section. Maybe it needs an explanation or introduction? [Any failure of a facility would have economic consequences…] (Pg 4-151, 4th para)

Agriculture-related Economics (Section 4.18.3)
Construction
2ah "As presented in Section 4.10.2.1 above and in Table 4.18-2 below, the maximum potential impact during construction would be a temporary loss of 221 AUMs."
"221" should be "222" AUMs (Pg 4-152, 1st para, 2nd line)
Also: Cannot find 4.10.2.1 and wonder if it should be 4.10.3 (Pg. 4-109 Construction, 2nd para)

Table 4.18-2
Construction
2ai This table would benefit from a "Totals" line at the bottom. (Pg 4-152)

Operations
2aj Replace "491" with "331". 491 is the total acreage of the new pit. 331 is the acreage of new disturbance in the area of the pit. The old Easy Junior pit already exists and it isn't correct to say Midway would cause that much more disturbance (Pg 4-153, 1st para, 1st line). Correct throughout section, e.g., see also 4.21.8 (Pg 4-175, 1st para)

Water and Solid Waste (Section 4.18.3)
Construction
2ak Replace "Adequate water rights have been secured to meet these needs and" with "Midway is in the process of securing adequate water rights to meet these needs and would be required to complete such process prior to operation and". (Pg 4-158, 1st para, last sentence)

The statement: "No waste from the project would be taken to the Whiskey Flats Landfill in Eureka County, or the Regional landfill in White Pine County" is not true.
We would ship all hazardous waste to appropriate facilities off-site, like we are doing at Pan. Non-hazardous wastes would go to a Class III landfill constructed on-site or be shipped to a non-hazardous waste landfill offsite. (Pg 4-158, last para); Also see Chapter 2 reference.

Operations
2al Same as above. (Pg 4-159, 2nd para)

22ae The asterisk has been added to the footnote text.

22af The text has been revised as suggested.

22ag The text in section 4.18.3 has been edited to reflect increased construction cost for the Pan Mine. The text notin the possibility of facility failure has been revised, to include:

"Potential socioeconomic impacts could occur as a result of unanticipated incidents during operation of the mine such as facility failure."

22ah The text, table, and section reference have been revised per comment.

22ai A "Total" row has been added to the table, now re-numbered as Table 4.18-3.

22aj The total area of long-term unreclaimed disturbance – up to 491 acres - represents the 367-acre pit, 13-acre process pond that would remain as an ET cell after closure, 82 acres of storm water control features that would remain after closure, and up to 29 acres related to the proposed county road re-route. Subtracting the 33-acre existing pit (Section 1.2) from the 367-acre footprint for the Gold Rock Pit (for a new total of 334 acres of new pit disturbance under the Proposed Action), the total long-term unreclaimed disturbance acreage would be "up to 458 acres." The text in chapter 2, value in Table 2.3-1, and text throughout chapter 4 has been revised to more accurately represent existing conditions and long-term unreclaimed disturbance of up to 458 acres from proposed activities.

22ak The text regarding water rights in sections 3.2 Water Resources, Existing Conditions, Water Use and Water Rights, 4.2.3 Proposed Action, Operation, Maintenance, and Reclamation, Water Rights and 4.18.3 Socioeconomic Resources, Proposed Action has been revised per the comment.

The text in sections 2.3.12 Ancillary Facilities and 4.18.3 Socioeconomic Resources, Proposed Action regarding waste disposal has been revised to incorporate information presented in this comment.

22al See response to 22ak.

Socioeconomic Resources (Section 4.18.3)
Fiscal Impacts
2am **SalesTax Receipts**
Midway would purchase from the tribes to the extent feasible. (Pg 4-160, 4th para, last sentence)

Environmental Justice (Section 4.19.3)
2an In the sentence that reads "The Census Block in which the proposed mine site is unpopulated", insert "located, is" between "is" and "unpopulated". (Pg 4-163, 1st para, last sentence)

Minority Populations
The use of 50 percent of the population, or the size of the unit considered (entire county) seems wrong here. I believe the 50 percent is intended to be applied to small communities, subsets of
2ao cities, neighborhoods, etc., not entire counties or larger entities. (Pg 4-163, 1st para in this section)

Low income Populations
2ap Please explain why the Duckwater and Ely Shoshone Reservations aren't discussed here. (Pg 4-164, 2nd para)

Chapter 5

Figure 5.1-6
US Highways 50, 93, and 80 are shown in green to show that they are part of the Hazardous
2aq Materials and Waste CESA, but this should be made obvious in the legend "Hazardous Materials and Waste CESA, and roads". Also, should this figure be numbered 5.20-1 to connect it to the Hazardous Materials and Waste section as is done in other chapters (same with all of the figures in chapter 5?)?

Water Resources (Section 5.5)
There may be other applications pending for appropriation of water rights in the area, such as those of the Southern Nevada Water Authority that could be mentioned in the cumulative
2ar impacts. Under Nevada law, the State Engineer for the Division of Water Resources must consider potential adverse impacts on other water users prior to and as a condition of granting such applications and, therefore, the potential for applications should not result in significant or notable cumulative impacts. (Pg 5-32ff)

Introduction [to Wildlife CE] (Section 5.11.2)
Greater Sage Grouse
The statement about the "Foremost effects to greater sage-grouse" does not reflect what BLM
2as and the United States Fish and Wildlife Service have recognized which is that the primary threats are fire and invasive species and, in some areas, including the relevant project area and based upon recently gathered information, predation by ravens. Reference to "other effects" that are not quantified should be identified as "potential" effects. (Pg 5-53, 1st para, last sentence)

22am The text has been modified to incorporate information presented in the comment.

22an The text has been corrected.

22ao Per Appendix A to Environmental Justice: Guidance Under the National Environmental Policy Act, "The selection of the appropriate unit of geographic analysis may be a governing body's jurisdiction, a neighborhood census tract, or other similar unit that is to be chosen so as to not artificially dilute or inflate the affected minority population."

Using the entire counties neither inflates nor dilutes the affected minority population, and is therefore suitable.

22ap In sections 3.19 and 4.19 the BLM has incorporated 2014 American FactFinder income data (U.S. Census Bureau 2014) for the Duckwater Shoshone Reservation and Ely Shoshone Reservation and expanded the text to clarify that the percentages of the populations of the Duckwater Shoshone Reservation and the Ely Shoshone Reservation identified as low income are higher than those of Eureka and White Pine counties and the state.

22aq Figures (and in-text references to those figures) in Chapter 5 have been re-numbered.

22ar The BLM has added text noting that 36 water rights applications are currently pending for the Railroad Valley/ Northern Part Basin. The pending applications, submitted by Southern Nevada Water Authority, are ready for action but have been protested. The applications request use of 191,254 acre-feet annually.

22as The USFWS, according to their species assignment form for Greater Sage-Grouse (http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06W), indicate the following threats to grouse populations: habitat conversion for agriculture, urbanization, infrastructure, energy development, climate change, pinyon-juniper encroachment, invasive plants, and fire. Therefore, the DEIS text about "foremost effects to Greater Sage-Grouse" is accurate. The word "Other" impacts was changed to "Potential" impacts.

Information on primary threats to Greater Sage-Grouse was added to Chapter 3, Section 3.9, Special Status Species, Greater Sage-Grouse.

Wildlife Resources (Section 5.11.6)
Big Game

"Cumulative effects to big game because of the Proposed Action combined with past, present, and RFFAs would only be approximately 3.8 percent of the mule deer CESA and 2 percent of the pronghorn antelope CESA (note, the Proposed Action is not anticipated to directly impact bighorn sheep or elk ranges within their respective CESAs)."
2at
Assuming that loss of this minor acreage (which is only indirect) would result in long-term impacts indicates that these animals would not adapt to minor environmental changes. Is that correct? Is the definition of long term the same as for Chapter 4 (13 years)? Should it be redefined for Chapter 5 and the cumulative effects? (Pg 5-60)

Migratory Bird and Golden Eagles (Section 5.11.6)
"Additional disturbance would result from unquantifiable impacts, such as climate change."
2au
The National Audubon Society (2015) has released a report detailing impacts on birds from climate change. This report is specific by species and should be cited here. The National Wildlife Federation likewise has modeled impacts to migratory birds (NWF 2013)

Greater Sage-Grouse (Section 5.11.6)
Cumulative effects are estimated to result in cumulative displacement and habitat fragmentation. Further, it is asserted that "Potential impacts associated with increased ambient noise levels throughout the CESA would include decreased greater sage-grouse breeding,
2av
nesting, and brood rearing activities." This statement is made several times throughout Chapter 5 and our comment herein applies to all such references. We have found no literature that satisfies standards under the Data Quality Act that demonstrate these impacts on sage grouse resulting from mining at the distances from leks of this proposed project. Site-specific monitoring at Pan has yet to show any noise increase from mining or mining related activities over baseline at the leks.

Note that the noise impacts shown to affect reproduction in Wyoming is based on oil and gas activities which produce significantly different noise both in continuity and frequency. We feel strongly that stipulations should be based on science that is reliable and replicable, and
2aw
specifically related to site-specific activities. In addition, the monitoring required at Pan and ongoing observation and adaptive management to determine what, if any impact, is occurring from activities at Pan should be noted as well as the significant studies being undertaken in the area. (Pg 5-61, 1st para).

While the effects of climate change are declared indeterminate for purposes of this analysis,
2ax
several organizations, including the BLM, have made the attempt and should be cited here. The mine should not be held responsible for impacts created by others if climate change modeling is not addressed. (Pg 5-61, 2nd para).

The following resources indicate that climate change could have a significant impact to sage grouse habitat in this affected part of Nevada:

> "Climate Change New information available suggests climate change will continue to impact species and ecosystems. The National Climate Assessment (2014, no pagination) concludes that the evidence of human-induced climate change continues to strengthen and impacts are increasing. The consequences of climate change in fragmented landscapes are altering habitat composition and timing of plant development cycles. Sagebrush habitat is continuing to be altered with climate change, which is affecting the spread of invasive species. This major

2ay

22at The BLM added text to sections 5.1.1 and 5.11.6 to clarify that for both the impact analysis in Chapter 4 and cumulative effects analysis in Chapter 5, short-term effects are defined as occurring within 13 or fewer years long-term effects are defined as occurring for more than 13 years.

22au The BLM added the following text to the migratory birds and golden eagle section of Section 5.11.6:

"Climate-related reductions in birds' breeding ranges across Nevada are predicted to range from 15 to 98 percer including a 77 percent reduction for the Brewer's Sparrow and an 86 percent reduction for the Sage Thrasher by 2080 (National Audubon Society 2015). Golden Eagles are anticipated to have a 79 percent summer range reduction and a 23 percent winter range reduction in Nevada by 2080 (National Audubon Society 2015)."

22av The BLM changed the sentence to: "Potential impacts associated with increased ambient noise levels from past, present, and RFFAs in combination with the Proposed Action could contribute to chronic stress among individu Greater Sage-Grouse and declines in lek attendance near noisy areas (Blickley et al. 2012a,b). Other alternative the Proposed Action were developed that would minimize noise impacts to Greater Sage-Grouse due to project-related traffic."

We have relied on best available science as cited in Chapters 4 and 5, which suggests that traffic noise does hav an adverse impact on Greater Sage-Grouse.

References cited in the text include academic theses, peer-reviewed scientific papers, and site-specific reports. These references are consistent with Data Quality Act standards.

Please note that there are some leks that are much closer to the Gold Rock main access route than at the Pan project, so the results of the noise monitoring at Pan are not directly applicable to Gold Rock, at least for the Proposed Action. However, Pan studies are relevant to the Northwest Main Access Route Alternative (which would use the same road as Pan) and therefore we've revised the text to discuss the Pan noise monitoring results the analysis for the Northwest Main Access Route Alternative.

22aw We have relied on best available science as cited in Chapter 4, which suggests that traffic noise does have an adverse impact on Greater Sage-Grouse.

We are unaware of any studies that have specifically looked at behavioral, demographic, physical, or other impa to Greater Sage-Grouse from mining-related noise. Because traffic noise would be the primary impact to leks fo the Gold Rock project, we believe that other studies looking at traffic noise are relevant and warrant inclusion ir the impact analysis. We used the best available science which included academic theses, peer-reviewed literatu site-specific studies and correlation studies. The Pan studies do not actually examine impacts of noise on Greate Sage-Grouse; rather, they examine whether there are any noise exceedances of a particular threshold at the near leks. Note that there are some leks that are much closer to the Gold Rock access roads than at the Pan project, so the threshold exceedance results of the noise monitoring at Pan are not directly applicable to Gold Rock, at least for the Proposed Action. However, Pan studies are relevant to the Northwest Main Access Route Alternative (whic would include the Pan Mine access road) and therefore the BLM revised the text to discuss the Pan noise monitoring results in the analysis for the Northwest Main Access Route Alternative.

22ax The BLM has revised text to clarify impacts to climate change and impacts from climate change.

threat is predicted to continue to degrade and fragment sage-grouse habitat and have a negative effect of sage-grouse populations. National Fish, Wildlife and Plants Climate Adaptation Strategy (2012, pp. 28-30) provides observed and projected ecological changes from the effects of climate change on shrubland habitats. Increasing temperatures are predicted to increase fire frequency, reduce sagebrush cover and favor the spread of invasive species. Changes in precipitation can accelerate areas becoming drier, changing fire regimes and result in more extreme weather events in sage habitats. Greater concentrations of atmospheric carbon dioxide create conditions favorable to cheatgrass, increase pest species and change plant species compositions. Therefore, the consequences of climate change, if current projections are realized, are likely to exacerbate the existing primary threats to greater sage-grouse of frequent wildfire and invasive nonnative plants, particularly cheatgrass as well as the threat posed by disease. For a detailed discussion of climate change and its impacts to greater sage-grouse, refer to the 2013 sage-grouse species assessment form attached as an appendix to this document." (USFWS 2014)

2ay,
cnt.

"The increase of severe droughts associated with global warming will exacerbate cheat grass growth and the spread of other harmful invasive species, thereby converting sagebrush step into exotic annual grassland with less forage value. Furthermore, cheat grass and other invasive plants increase the frequency and intensity of wildfires, thereby leaving sagebrush habitat with little chance of recovering, increasing the costs of fire suppression and control and increasing risks to human lives and facilities." (National Wildlife Federation n.d.)

Midway supports efforts to address the primary threats to sage grouse–predation, fire, and invasive species--and is willing to work with BLM on effective mitigation for actual impacts.

Range Resources RFF Disturbance (Section 5.12.4)

2az Although Midway agrees that the amount of wild land fire that could occur within the reasonably foreseeable future within the CESA is unknown and not quantifiable, it could be noted that mitigation is proposed to address any additional potential for wild land fire that could arise from the Proposed Action or mining related activities or construction. (Pg. 5-65)

Environmental Justice and Low income Populations

We would expect there to be cumulative effects, including positive impacts, to the local tribes if many of these projects were to materialize.

2ba We do note that BLM made significant efforts to ensure numerous opportunities for Tribal input relative to the Project including multiple meetings at various stages of the NEPA process with each potentially impacted Tribe. Midway notes the Goshute Tribe's comments during public meetings on the DEIS reasonably acknowledged that given the distance of the proposed project from their reservation it was unlikely there could be any possible impact on them.

Thank you for the opportunity to comment, and we look forward to the release of the Final EIS.

Sincerely,

22ay The USFWS, according to their species assignment form for Greater Sage-Grouse (http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06W), indicate the following threats to Greater Sage-Grouse populations: habitat conversion for agriculture, urbanization, infrastructure, energy developm t, climate change, pinyon-juniper encroachment, invasive plants, and fire. Information on these primary threats to Greater Sage-Grouse was added to Chapter 3, Section 3.9, Special Status Species, Greater Sage-Grouse, and it was noted that climate change may exacerbate these threats.

The BLM added the following to the Greater Sage-Grouse section in Section 5.11.6:

"Climate change is predicted to result in increased fire frequency in shrubland habitats, contributing to the prolifera on and spread of invasive grasses such as cheatgrass, which will be detrimental to Greater Sage-Grouse habitat (Natior Fish, Wildlife, and Plants Climate Adaptation Partnership 2012). Provencher and Anderson modeled impacts to vegetation in Nevada assuming an average temperature rise of 3 degrees F over the next 30 years. The modeled projections show a shift in functional groups, where pinyon-juniper woodlands would shift toward sagebrush-dominated communities and sagebrush-dominated communities would shift toward salt desert scrub communities. The exact extent of the potential impacts from climate change is uncertain and cannot be quantified at the local scale of the CESA. Across its range, the Greater Sage-Grouse is predicted to lose approximately 71 percent of its breeding rang and 92 percent of its non-breeding range by 2080 due to climate change (National Audubon Society 2015)."

22az The text was modified as suggested.

22ba Thank you for your comment. The BLM confirms that during the public open house meeting at the Confederated Tribes of the Goshute Reservation, Tribal members did note orally that they anticipated that the Gold Rock Mine Project would not affect them given the distance between the proposed mine and their reservation.

The BLM did not perform a cumulative effects analysis of environmental justice because no disproportionately high r adverse impacts to environmental justice communities were identified, and thus the proposed mine would not contribute to any disproportionately high or adverse cumulative effects. Given that the two tribes nearest the propos d mine are both located in White Pine County, and that White Pine County is included in the analysis area, it is implic that the potential cumulative benefits could also be realized by the tribes (the rising tide floats all boats concept).

LETTER 22

Tom Williams
VP of Environmental Affairs
Midway Gold US Inc.

Selected References

Audubon 2015
Audubon's Birds and Climate Change Report
http://climate.audubon.org/sites/default/files/Audubon-Birds-Climate-Report-v1.2.pdf

Barber, JR, KR Crooks, and FM Fristrup. 2010
The costs of chronic noise exposure for terrestrial organisms. Trends Ecol Evol. 2010 Mar;25 (3):180-9.

DOI: http://dx.doi.org/10.1016/j.tree.2009.08.002. Epub 2009 Sep 15.

Blomberg, Erik J., Daniel Gibson, James S. Sedinger, Michael L. Casazza & Peter S. Coates. 2013.
Intraseasonal variation in survival and probable causes of mortality in greater sage-grouse *Centrocercus urophasianus* Wildlife Biology 19(4):347-357. 2013
doi: http://dx.doi.org/10.2981/13-001

Bui, Thuy-Vy D, John M. Marzluff, and Bryan Bedrosian. 2010.
Common Raven Activity in Relation to Land Use in Western Wyoming: Implications for Greater Sage-Grouse Reproductive Success. The Condor 112(1):65-78. 2010
doi: http://dx.doi.org/10.1525/cond.2010.090132

National Wildlife Federation (NWF). 2013.
Shifting Skies: Migratory Birds in a Warming World
http://www.nwf.org/News-and-Magazines/Media-Center/Reports/Archive/2013/06-18-13-Migratory-Birds-in-a-Warming-World.aspx

NWF (n.d.)
Global Warming and Sagebrush Steppe Habitat
http://www.nwf.org/Wildlife/Threats-to-Wildlife/Global-Warming/Effects-on-Wildlife-and-Habitat/Sagebrush-Steppe.aspx

US Fish and Wildlife Service (USFWS). 2014.
2014 Species Assessment Form for the Centrocercus urophasianus (entire)
http://ecos.fws.gov/docs/candidate/assessments/2014/r6/B06W_V02.pdf

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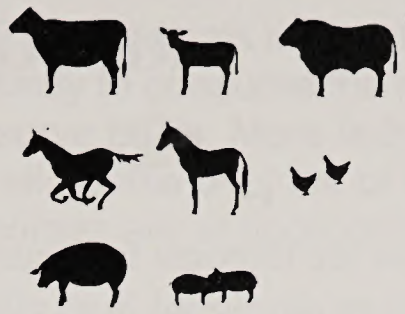

N-4 State Grazing Board
P.O. Box 461
Panaca, Nevada 89042
775-728-4682
April 3, 2015

Attn: Dan Netcher, BLM Project Manager
BLM Ely District Office
HC 33 Box 33500
Ely, Nevada 89301

re: comments on Gold Rock Mine Project Draft EIS

Dear Dan:

Thank you for this opportunity to provide comments to the Draft EIS for the anticipated Gold Rock Mine Project. We ask for your courtesy in accepting these comments.

The N-4 State Grazing Board takes the following positions on the issues raised in the DEIS for Gold Rock Mine:

23a

- Project size should be limited to what is currently under fence at 8,757 acres, since only 3,946 acres are projected to be disturbed, inside this fenced area, there is no need for an additional 10,000 acres for this project and its operational needs. The N-4 Board recommends requiring Gold Rock to use only the fenced in area for the life of this proposed project, reclaim it with successful adaptive management and monitoring and then be considered for additional area to develop further mining operations in the years to come.
- Particular interest and review is offered for Chapter 3 Affected Environment, especially section 3.10 Range Resources. In each of the eight allotments or use areas, the DEIS reveals the associated Standards Determination Documents for each permit renewal noted that range conditions that were not achieving or improving towards standards were NOT due to livestock grazing, but rather drought and over use by wild horses and in some cases wildlife.
  Note Pages 3-89 through 3-92 referenced herein.

23b

- In Section 3.12 Wild Horses the Pancake Herd Management Area HMA (combined Monte Cristo and Sand Springs East) is some 855,000 acres that now contains a BLM count of 1,302 horses where the Appropriate Management Level AML is between 340 and 493 horses. This N-4 Board is opposed to any development by BLM of water sources assigned to wild horses. Note figure 3.2-1 three springs in the general area but none in the mining project plan area.

23c

- Human casual travel, mining business travel, and containment of wild horses to proper areas can be best managed by the use of new cattleguards along current and future developed roadways necessary for mining operations.

23d

- It is particularly concerning to the N-4 Board that the discussions on the eight allotment/ use areas states: "***the SDD did not evaluate or assess achievement***

RESPONSES TO LETTER 23

23a Please see response to comment 18a. Please note that the proposed location of the mine area fence has been developed in an effort to maintain public safety and security while retaining access to as much public land as possible. The larger extent of the Plan area allows for exploration outside this fenced area that would involve limited actual surface disturbance.

23b Thank you for your comment. Management of grazing allotments is outside the scope of this EIS.

23c The Proposed Action would not involve development of water sources assigned to wild horses. The action alternatives would not involve development of water sources assigned to wild horses. No wate sources assigned to wild horses would be located within the Plan area.

23d To address this comment, an Applicant-Committed EPM has been added to Table 2.3-8: "Install cattle guards along project roads to exclude livestock and wild horses from the fenced mine area and minimize risk of injury to livestock, wild horses or people or damage to physical property" and noted in the impact analysis in Section 4.10.

of the wild horse standards and guidelines". These animals live on this public multiple use land 365 days a year with the opportunity to consume the most desirable plants available on their first come first serve basis. More federal management actions must be taken to solve this wild horse overuse of this area. All uses of this public land will benefit when wild horses are at appropriate numbers.

23e

- Page 2-69, Figure 2.3-8, Re-vegetaion and seed mixtures for reclamation. This Board strongly supports the concept of using both native and non-native seed specie. As stated in this section, the non-native beneficial plants often provide a quicker cover for the harder to establish native beneficial plants. This N-4 Baord supports adaptive management during all phases of this project: construction, operation, monitoring, and reclamation.

23f

- Concerning 2.3-8 the DEIS should include information on who will be responsible and who will be involved in doing the surveying and monitoring of the seed establishment of this project.

23g

- The various sections relating to socio-economical resources, cultural resources and traffic patterns should have included involving the local county, in this case White Pine County and their Public Land Use Plan and County Master Plan that have pertinent county policies and sections to this DEIS

23h

- Greater Sage Grouse Conservation Practices, chapter 3, should include the work and already accomplished projects and the planned projects of the Governor's Sagebrush Ecosystem Council in addition to the BLM and USFWS land use plans

23i

- The N-4 Board supports the avoidance of winterfat locations.

23j

- This N-4 Board rejects the concept listed in the DEIS that lightning is a human altered effect. This is clearly a misconception and error.

23k

The N-4 State Grazing Board appreciates this opportunity to comment on this important project. We look forward to working with the Gold Rock construction and operations crews to assure success of this project and the continuation of a viable livestock industry in this valley. Please contact us at any time we can provide further information.

Sincerely,

Connie Simkins, secretary to
N-4 State Grazing Board
Submitted in consultation and
Under the direction of
N-4 Chairman Gracian Uhalde

cc: Mike Herder, Manager Ely BLM District
Jill Moore, Egan FO Ely BLM
Kevin Phillips, Lincoln Co Commission
Mike Coster, White Pine Co Commission
J J Goicoechea, Eureka Co Commission

23e Preparation of standards determination documents is outside the scope of this EIS.

23f Table 2.3-7 lists the reclamation seed mixture, which includes both native and non-native species. As not in Section 2.3.16, the primary revegetation effort would emphasize re-establishment of the native species included in the soil seed bank and revegetation seed mixtures.

23g Text in Section 2.3.16, subsection "Reclamation Plan" has been expanded to note that reclamation would determined to be successful and complete upon demonstrating compliance with NDEP guidelines **and BL Nevada's *Northeastern Great Basin Area Standards and Guidelines for Grazing and Wild Horses and Burros* (BLM 2007)**, and approval by BLM and NDEP.

Subsection "Post-Reclamation Monitoring and Maintenance" has been expanded to note that monitoring would be conducted by Midway and a BLM specialist.

23h The White Pine County Roads Director participated in developing alternatives to the Proposed Action wit regard to access routes. The White Pine County Commission is a cooperating agency, and was involved i reviewing this EIS. The White Pine County Community and Economic Development Office also reviewe the socioeconomic sections of the EIS. Section 3.15, subsection Land Use Plans and Policies, includes a summary of the White Pine County Land Use Plan. With regard to cultural resources, text in the White P County Land Use Plan notes that the BLM prioritizes and offers solutions to protecting cultural resources the 2008 Ely District Resource Management Plan. Any action approved by the BLM would be required t comply with the National Historic Preservation Act and the Archaeological Resources Protection Act.

Text from the White Pine County Land Use Plan has been added to section 3.15, noting that: "The White Pine County Land Use Plan encourages the expansion of the mining sector and compatibility with protectio and preservation of the quality of the environmental quality, **and economic, cultural, ecological, scenic, historical and archaeological values** within the county.

23i More background information on the 2014 Nevada Greater Sage-Grouse Conservation Plan (Sagebrush Ecosystem Technical Team 2014) has been added to Section 3.9 Existing Conditions, Special Status Animal Species in the EIS.

23j Thank you for your comment.

23k Section 3.8, subsection Existing Conditions, Vegetation Communities, Human-Altered Areas, includes a description of a patch of vegetation where a lightning-strike fire likely burned the vegetation. The BLM ha added text to clarify that this patch of vegetation consists of native and non-native species similar to vegetation communities found in human-altered areas. The BLM has added footnotes to tables in Section 4.8.3, noting that for analysis purposes, a patch of vegetation within the Plan area believed to be a lightnin strike area was included with human-altered communities based on the similarities in vegetation.

DUCKWATER SHOSHONE TRIBE
511 Duckwater Falls Road, P.O. Box 140068
Duckwater Nevada 89314
(775) 863-0227 Phone
(775) 863-0301 Fax

Bureau of Land Management
APR 13 2015
RECEIVED
Ely, NV

April 8, 2015

Dan Netcher
BLM Ely District Office
HC 33 Box 22500
Ely. Nevada 89301

Dear Mr. Netcher,

I am a bit late in submitting the comments for the Duckwater Tribe for the Gold Rock Project.

24a 3.12 Wild horses. The is a herd of wild horses in the area and what degree will the HMA be impacted? Will the horses be rounded up and removed or the number managed as usual?

24b 3.14 Native American concerns: The Tribe supports the hiring of tribal monitors/observers during the excavation and building of the mine. As mentioned in the cultural report there are over 200 sites and several antelope traps that were recorded during the survey. During the tribal monitoring phase, possible TCP's may be identified as well as Traditonal Cultural Properties and mitigation measures should be in palce for protection of these possible sites before the mining activity begins.

24 The Duckwater Tribe supports the Gold Rock Mine Project and hopes that both the mining company and the Tribe can have a working relationship.

Sincerely,

Maurice Frank-Churchill

Maurice Frank-Churchill
Assistant to Division Managers

RESPONSES TO LETTER 24

24a Section 3.12 describes existing conditions for wild horses in the project area, and Section 4.12 describes impa to wild horses, including an increased risk of vehicle/wild horse collisions and short-term and long-term loss access to habitat. Management of wild horses is outside the scope of this EIS.

24b Section 3.13 Cultural Resources notes that the BLM and SHPO have signed a Programmatic Agreement for the Go Rock Mine Project, which outlines the methods of identification and treatment of cultural resources.

Section 3.14 Native American Religious and Traditional Values notes that the Tribe requested that if the Gc Rock Mine Project is approved, Tribal monitors would be invited to work with the archaeologists and Midw as Midway builds the project.

Section 4.14.3 Native American Religious and Traditional Values, Proposed Action notes that because effects to traditional antelope traps have been identified as an issue by the tribes, the BLM will consult with the tribes regarding these effects. If additional Native American religious and traditional values or specific Native American concerns are identified in the course of ongoing consultation, the BLM would consult with the appropriate Tribes and individuals to obtain information and discuss appropriate mitigation measures.

The BLM also added that "The Programmatic Agreement identifies stipulations to ensure that historic properties would be avoided or treated to mitigate effects to the extent practicable. Monitoring project activities near a site is considered a treatment. Monitoring helps to assure avoidance and protection of the site, as well as to identify, avoid and protect undocumented objects or features outside the recorded extent of the site. In compliance with the Programmatic Agreement, monitoring would be performed during project-related construction activities in the Pla area. As noted in Section I-C of the Programmatic Agreement, 'Midway would bear the expense of identification, evaluation and treatment of all historic properties. This would include paying and covering the expenses of monitors.' Typically, an archaeological monitor would also be present with the tribal monitor."

Section 4.14.11 (FEIS Section 4.14.12) notes that mitigation measures would include avoidance and protection that would limit or minimize direct adverse effects to these resources.

The BLM has revised text in Section 4.14.11 (FEIS Section 4.14.12) to state:

"With regard to specific properties or sacred sites, at this time no properties of traditional religious and cultural importance, including TCPs and sacred sites, have been identified by the Tribes in the study area. If tribal representatives were to identify any sites of tribal importance, impacts to these resources would be mitigated throug specific operating procedures, stipulations, or mitigation measures developed in consultation with the affected tribes Any Native American human remains discovered during construction activities would be treated in accordance with the Programmatic Agreement (Appendix 1B) [formerly Appendix 1A] and Applicant-Committed Environmental Protection Measures. Therefore, no additional monitoring and mitigation measures are recommended."

Thank you for your comment.

24c

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

JUN 01 2015

Jill A. Moore
Field Manager
Egan Field Office
Bureau of Land Management
702 N. Industrial Way
Ely, Nevada 89301

Subject: Draft Environmental Impact Statement for the Gold Rock Mine Project, White Pine County, Nevada [CEQ 20150031#]

Dear Ms. Moore,

The U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement (DEIS) for the Gold Rock Mine Project. Our review and comments are provided pursuant to the National Environmental Policy Act, the Council on Environmental Quality Regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

The Gold Rock Mine Project, proposed by Midway Gold U.S. Inc., would be located at the site of the previously reclaimed Easy Junior Mine in White Pine County, Nevada, 50 miles east of Ely and 30 miles south of Eureka. As described in the DEIS, the mine would disturb 3,946 acres of BLM lands in the construction and operation of an open mine pit, two waste rock disposal facilities, a heap leach facility, a mill, a tailings impoundment, a 69 kilovolt transmission line and other associated facilities. EPA understands that the anticipated mining production period is 10 years, while closure and post closure activities would extend the total project life to approximately 48 years.

On October 18, 2013, in response to a request from the BLM Egan Field Office for EPA to be a cooperating agency on the Gold Rock Mine Project, EPA expressed its desire to coordinate with BLM under the existing "Memorandum of Understanding Between EPA and Nevada BLM for Mining Environmental Impact Statements" (MOU), which had been reaffirmed in April 2013. We enclosed a copy of the MOU with our response. The goal of the MOU is to encourage early coordination between our agencies and to raise potential concerns as early in the NEPA process as possible.

On November 5, 2013, EPA sent scoping comments on the Gold Rock Mine project to the BLM, including questions and recommendations regarding mine design, geochemistry, and reclamation and closure procedures. Those comments were largely based upon our review of a number of technical and baseline reports, as well as the draft Plan of Operations for the Gold Rock Mine Project, which had been provided to us by the BLM. EPA's scoping comments identified significant missing information and flaws in the analyses performed in those documents, and recommended numerous revisions before the contents of the reports were incorporated into the DEIS. In accordance with the aforementioned MOU, EPA anticipated being provided the opportunity to review revised technical reports and an administrative draft of the DEIS. This did not occur, and the next communication that EPA received

RESPONSES TO LETTER 25

25a Thank you for your comments.

25b Thank you for your comments.

25c Thank you for your comments.

25d Thank you for your comment. The BLM has included responses to the EPA's scoping comments. Please see responses to comments 26a through 26bs .

from the BLM regarding the Gold Rock Mine Project was on February 13, 2015, when the DEIS Notice of Availability was published in the Federal Register.

Upon review of the DEIS, EPA found that the document lacked substantial information on baseline geochemistry, waste rock management, and closure of the waste rock and tailings storage facilities, and hydrogeologic critical to a comprehensive understanding of the project's potential impacts upon water resources. In addition, without the aforementioned information on mine design and potential wate resource impacts, we were unable to determine whether any long term post-closure monitoring and mitigation measures would likely be required for this project.

On April 22, 2015 and again on May 4, 2015, EPA and BLM met via conference call to discuss EPA's concerns with the project and the lack of critical information in the DEIS. EPA found these calls to be productive and informative. At the conclusion of the calls, BLM committed to provide EPA with a technical memorandum providing responses to EPA's concerns and identifying where in the project record much of the information missing from the DEIS was contained. EPA received that memo on May 15, 2015 (Attachment 4). We greatly appreciate the BLM's rapid and thorough response to our discussions. We find that, while the memo does not fully address all of our concerns, it does clarify several key points and provide reference to a number of plans and technical documents that contain critical information that is absent from the DEIS. BLM's May 2015 Memo also includes specific commitments by BLM to include additional detail from, and citation to, the referenced technical documents in the Final EIS.

EPA supports the practice of "incorporation by reference" in the NEPA process in order to control the length and technical detail contained in an EIS; however, sufficient summary information should be included in the DEIS to enable the reader to understand the design and impacts of the proposed project and its alternatives. Supporting documentation can then be included in an appendix or incorporated by reference, as appropriate (See CEQ's "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations" [Question 25b] for guidance on determining whether inclusion as an appendix or incorporation by reference is warranted). In this case, however, BLM did not include sufficient summary of, or citation or access to, a number of key documents intended for incorporation in the subject EIS. We believe that doing so in the Final EIS is necessary to provide a robust description of the proposed project and its potential environmental effects, and we appreciate BLM's stated commitment to include such information and citations in that document. In addition, we recommend that the BLM consider making referenced materials available in an electronic format or via download from the BLM's website. For all future projects, we strongly recommend that this be done at the DEIS stage of the NEPA process, and that any documents incorporated by reference be sufficiently summarized in the DEIS.

Based on our review of the DEIS, as clarified by BLM's May 2015 technical memorandum (attached) and materials in the project record that are referenced in that memo, EPA has rated has rated the Gold Rock Mine Project and DEIS as "EC-2 – Environmental Concerns, Insufficient Information" (see Enclosure 1: "Summary of Rating Definitions and Follow-Up Action"). Our detailed comments, including specific recommendations and remedies, are enclosed (Enclosure 2). In accordance with the aforementioned MOU and as previously discussed, EPA requests the opportunity to review a preliminary draft of the Final EIS and provide BLM our feedback before the Final EIS is published.

25e Please see responses to comments 25k through 25q .

25f Thank you for your comment.

25g Please see responses to comments 25k through 25q, which note text that has been added to the EIS to address EPA's concerns .

25h The BLM has included the EPA in the review process for the FEIS.

As discussed in our teleconferences, many of EPA's concerns related to this project are directly relevant to concerns and recommendations that were raised in our 2013 scoping letter. Because it remains unclear where certain of those concerns were addressed, we respectfully request that the sections of our October 5, 2013 scoping letter (Enclosure 3) under the headings of "Geochemistry" and "Mine Reclamation, Closure and Post-closure" be considered part of our comments on the DEIS and be addressed in the Final EIS response to comments.

We appreciate the time and resources you have committed in recent months to working with EPA to address our concerns. We also appreciate the extensions of the DEIS comment period that you granted us in order to enable that process to occur. EPA looks forward to continuing to work with you on this project in accordance with our MOU, and we are available to discuss any of our comments. If you have any questions, please call me at (415) 972-3521, or have your staff contact Carter Jessop, our lead NEPA reviewer for this project, at (415) 972-3815. Please send a copy of the Final EIS to this office (mail code ENF-4-2) at the same time it is electronically filed with our Washington, D.C. office.

Sincerely,

For

Kathleen Martyn Goforth
Environmental Review Section, Manager

Enclosures:
(1) Summary of Rating Definitions
(2) EPA's detailed comments on the Goldrock Mine Project DEIS
(3) EPA's November 5, 2013 Scoping Comment Letter
(4) "Response to EPA Comments, April 22 and May 4, 2015" (with cover letter)

cc: Amy Lueders, BLM, Nevada
Tom Olsen, BLM, Nevada
Bruce Holmgren, Nevada Division of Environmental Protection

25i Please see responses to comments 26s through 26ag and responses to comments 26ax through 26bl .

25j Thank you for your comment. The BLM will send a hard copy of the FEIS to the EPA's Region IX office in California when we electronically submit the document to the EPA in Washington, D.C.

U.S. EPA DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE GOLD ROCK MINE PROJECT, WHITE PINE COUNTY, NEVADA – JUNE 1, 2015

Geochemistry

As stated in our November 2013 scoping comments, it is unclear from the *Draft Baseline Geochemistry and Waste Rock Handling Report* that sampling and testing conducted to date are sufficiently representative of the waste rock at the Gold Rock mine to accurately characterize the geochemistry and make reliable predictions about how mine rock will react over the long term. The static test sample size of 124 samples is relatively small, compared to testing done for other mine sites proposed for development on BLM land in Nevada that EPA has reviewed in the past. In addition, only eight of the 94 samples identified as potentially acid generating by static testing were carried forward for analysis in humidity cell tests. No information is contained in either the *Geochemistry Report* or the DEIS explaining why these 8 samples were deemed to be representative of the volume of waste rock with the potential to generate acid.

> *Recommendations*: In the Final EIS, address the representativeness of the samples used for geochemical characterization of Gold Rock Mine waste rock. Explain the basis for the conclusion that the limited sample pool is representative of the total volume of waste rock to be produced and disposed of by the Project. Where data from the Pan Mine were used to inform decisions related to geochemical characterization, such data should be clearly summarized and cited.

The description of the geochemical characterization and proposed management strategy for potentially acid generating waste rock materials provided in the DEIS demonstrate that substantial uncertainty remains in both respects. According to the DEIS, geochemical static test results indicate that approximately 60% of the roughly 170 million tons of waste rock material that the project will produce are categorized as potentially acid generating; however, "most of the material is expected to be non-acid generating" (p. 2-23). EPA notes that BLM's May 2015 Memo to EPA states that project geochemistry is expected to be similar to the recently approved Pan Mine project and sufficient neutralizing material would be available to encapsulate all PAG rock even in the worst case scenario. The DEIS does not contain sufficient information to assess the appropriateness of using the Pan Mine as a geochemical analog for the Gold Rock project. We appreciate the commitments made in BLM's May 2015 Memo to add a more robust discussion of project geochemistry.

Neither the *Baseline Geochemistry Report* nor the DEIS identifies the volume of rock that would be classified as "environmentally adverse" due to its non-acid metals leaching potential. Meteoric water mobility procedure testing indicates that much of the waste rock material the project would produce would likely generate levels of arsenic, selenium and thallium that exceed Nevada reference values if contact with water occurs.

> *Recommendations:* In addition to the commitments made in BLM's May 2015 Memo to EPA, provide evidence, in the FEIS, to demonstrate that the Pan Mine project represents an appropriate geochemical analog for the Gold Rock project. Identify the volume of adverse, but not acid-generating waste rock that the project is anticipated to generate and describe procedures for field identification and any necessary sorting of such materials into designated encapsulation cells.

25k Section 3.2, "Water Quality" has been revised to provide more information on the representativeness of the samples chosen. The drilling and sampling program used over 24,000 feet of rock core; there were 14 lithologies identified that comprised 100 percent of the rock core encountered. This would be consistent with the MEND guidance which suggests samples be geologically, geochemically, and spatially representative of the rock material encountered. MEND also recommends a phased approach that allows for continued sampling that will be part of the adaptive management approach. The primary benefit is testing of material as it exists in the environment (as opposed to un-exposed rock core) so that testing measures true acid-generating potential.

A summary of the Pan data has also been included, along with Easy Junior Mine historical waste rock sampling and analysis.

The BLM has added text to Section 4.2.3, Water Resources, Operations, Maintenance, and Reclamation, Groundwater, clarifying that up to 101,760,000 tons of PAG rock would result from mining operations. However, the remaining 40 percent of the waste rock that is non-PAG has sufficient acid neutralizing characteristics and volume to encapsulate the PAG material.

25l Section 3.2, "Water Quality" has been expanded to include a summary of the Pan Mine data and the rationale for including it in the EIS. Rock types in both project areas are similar and share similar alteration patterns.

Text summarizing the Gold Rock MWMP analysis data was also added. The samples that demonstrated potential production of arsenic, thallium, and selenium were primarily carbonized shale material, which comprised 60 percent of the rock material encountered during the drilling program. These materials would be handled appropriately by the proponent as described in the Plan of Operations waste rock handling plan. Monitoring would also be performed to assure these materials are not adversely affecting water quality.

See also the comments and recommendations regarding "Geochemistry" in EPA's November 2013 scoping comments, enclosed (Enclosure 3).

Mine Design, Reclamation, and Closure

The description of reclamation and closure of the proposed tailings storage facility (TSF) in the DEIS is incomplete. The DEIS describes the combined active/passive strategy for evaporation of the entrained solution inventory that would occur for the first 10 years after TSF closure, but lacks a discussion of anticipated tailings fluid management following those first 10 years. According to the Plan of Operations, Midway anticipates the operation of a pump-back system that would move draindown fluids from the above-liner drain system sump to the tailings surface where it would then be evaporated. This pump is estimated to require operation for 30 years. Without additional information, it is not possible to discern the possibility or likelihood that the TSF would be fully successful in the management of draindown solutions and prevention of seepage. BLM's May 2015 memo to EPA provides clarification and reference to a number of documents in the project record that provide a far more complete description of the proposed tailings closure strategy. In that memo, BLM commits to providing substantial additional information in the FEIS to describe the proposed tailings design and reclamation, closure and post-closure plans.

Recommendations: In addition to the commitments made in BLM's 2015 memorandum to EPA, ensure that the Plan of Operations and all of its appendices (and any sub-appendices thereof) relied upon for the description of the tailings storage facility design and closure strategy are made readily available for public review. This can be accomplished at minimal cost by either providing a disc containing these documents with the EIS, or by making them available for download from the BLM's website.

The DEIS states that the waste rock, heap leach and tailings reclamation would all involve the placement of a growth medium cover on regraded surfaces and seeding with a native seed mix. As noted in our prior correspondence, it is unclear how the BLM determined the necessary cover thicknesses discussed, particularly with regard to waste rock and tailings closure. We appreciate the commitment provided in BLM's May 2015 Memo to expand the description of the cover soil modeling. The Memo indicates that Midway would place a 1-foot thick layer of growth medium over the waste rock and tailings facilities. Pages 2-60 and 2-62 of the DEIS, however, indicate that the waste rock and tailings facilities would be capped with "a minimum" of 6 inches of growth medium. It is unclear whether this difference is due to error or a change in the project proponent's reclamation plan. In addition, while the Memo indicates that BLM will note in the FEIS that the heap leach cover soil modeling was "used as a guide in developing the cover thickness" for the waste rock and tailings facilities, it remains unclear what the anticipated effectiveness of this cover thickness is.

Recommendations: Specify, in the FEIS, the anticipated net infiltration rate expected for the reclaimed waste rock and tailings facilities with the proposed growth media cover. Clarify whether this cover would be 6 or 12 inches and the quantitative basis for this thickness. Describe the effect of this rate of infiltration and explain why a thicker cover that would further limit infiltration is not necessary. If the proposed cover thickness would be limited due to the lack of availability of growth media, we recommend the FEIS indicate this and disclose whether this would increase the risk that seepage would be generated by the waste rock or tailings facilities in the long term.

25m The BLM expanded text in Section 2.3.9 Tailings Storage Facility, adding text from the Plan and its appendices to further describe aspects of the above-liner underdrain pump-back system with solar-powered, replaceable pumps, and noting that Midway would install, maintain and monitor solution levels in piezometers installed in the vicinity of the tailings during operations, closure and post-closur The BLM also added text from the Plan to further describe solution management during the 10-year active management post-closure period.

The BLM added text to Section 2.3.16 Reclamation Plan, clarifying that following issuance of the BLM's Instruction Memorandum NV-2013-046, Midway's design consultant evaluated the potential requirements for TSF draindown modeling based on the water balance models provided in Conceptua Engineering Design for Heap Leach and Tailings Storage Facilities (SRK 2013) (Appendix E of the Plan). The BLM added text from the Plan further describing the store-and-release cover on the TSF.

Throughout the preparation of the EIS, the BLM maintained a copy of the 2013 Plan of Operations at Ely District office. Prior to issuing a Notice to Proceed, the BLM will receive a copy of the revised Plan of Operations, updated to incorporate the Preferred Alternative. The BLM also will maintain tha copy of the Plan of Operations for public review.

25n The BLM has expanded text in Section 1.2 Project History, noting that soil cover modeling was performed as part of the 2003 and 2004 Easy Junior Mine closure activities (CDM Federal Programs and CDM Constructors Inc. 2003). The results of that modeling indicated that a 1-foot-thick cover would provide 98 percent cover system efficiency in limiting percolation from the cover soil cap into the regraded leach pad material.

The BLM has also expanded text in Section 2.3.16, Plant Growth Medium, noting the Easy Junior Mi soil cover modeling, along with soil cover modeling was performed as part of mine planning and permitting at the nearby Pan Mine (Dwyer 2012), and more recent modeling for the Gold Rock Projec (Interralogic 2013b). At the Pan Mine, soil cover modeling results indicated that a 2.5- foot thick soil cover would result in 0 percent infiltration (Dwyer 2012). The BLM has added a table, Table 2.3-6 Depths of Cover and Growth Media To Be Placed At Closure, to this subsection summarizing information in the Plan regarding the thickness of alluvium or colluvium cover and the thickness of growth media to be placed, by facility.

The BLM has added information from the Plan and its appendices to the subsections on the WRDAs, heap and TSF in Section 2.3.16, noting a cumulative infiltration expected for the 2.5 and 3.0 foot thicknesses simulated in the modeling. A single net infiltration rate was not reported because the precipitation input was varied over the simulation period, and therefore the infiltration rate varied as well.

The DEIS states that monitoring of groundwater would be performed in accordance with a Water Pollution Control Permit (WPCP) to be issued by the state of Nevada. Figure 5 of the Plan of Operations (POO) identifies the preliminary locations for the four proposed groundwater monitoring wells, with two placed at the downgradient edge of the tailings facility and two some distance from the downgradient edge of the heap leach facility. No specific information is provided regarding monitor well sampling depth, sampling frequency, mitigation triggers, or potential mitigation measures. In addition, EPA was not able to find a map similar to Figure 5 of the POO in the DEIS depicting the proposed monitoring well locations. EPA notes that the DEIS and POO disclose the possibility that shallow perched aquifers may exist discontinuously across the project site; however the location and extent of any such hydrogeologic features is unknown. It is not clear whether the proposed groundwater monitoring wells would capture potential impacts to any shallow perched aquifers that may exist on the site. While Nevada Department of Environmental Protection is the permitting agency responsible for the issuance of the Water Pollution Control Permit, the provisions of the WPCP are relevant to the potential environmental impacts of the proposed project.

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> *Recommendation:* Include additional details regarding groundwater quality monitoring. Describe the status of the WPCP and provide a summary of its requirements; if available. We recommend that the BLM require the placement of shallow groundwater monitoring wells in any perched aquifers identified or encountered on the mine site.

Hydrogeological Characterization

The DEIS contains an incomplete description of the hydrogeologic baseline conditions and potential impacts of the project. As noted above, the DEIS and POO indicate that shallow alluvial aquifers may exist on the project site, but the location and extent of any such aquifers has not been identified. The DEIS describes spring-fed perennial stream segments as near as 1.2 miles from the Plan area (p. 3-2), but does not indicate whether seepage of shallow subsurface flow from project facilities has the potential to reach these systems. Although the waste rock, tailings and heap leach facilities are all designed to be zero discharge facilities, any drainage these sites might generate would likely exceed State water quality reference values for a number of constituents, particularly arsenic, selenium and thallium. Shallow alluvial aquifers may provide a pathway for transport of contaminants off the project site and into adjacent perennial waters. BLM's May 2015 Memo commits to the insertion of additional detail into Sections 3.2 and 4.2 of the FEIS clarifying the existing hydrologic conditions at the proposed project site.

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> *Recommendations:* In addition to the commitments made in BLM's 2015 Memo, include, in the Final EIS, a more thorough characterization of onsite hydrogeology, including the confirmed or anticipated locations of any shallow alluvial aquifers and a description of the efforts made to identify any such alluvial groundwater. While EPA understands that no shallow alluvial aquifers have yet been encountered nor does the project proponent necessarily anticipate encountering shallow groundwater, the Final EIS should discuss the actions that BLM will require in the event that any such aquifers are encountered. We recommend the placement of groundwater monitoring wells in any identified shallow or perched groundwater aquifers on the project site.

The DEIS concludes that the project poses no risk to surface water resources resulting from groundwater extraction, however, insufficient information is provided to support this conclusion. Additional information is needed describing the methodologies, assumptions, and results for the Theis Analysis calculation employed to determine the maximum drawdown effect in the vicinity of the water supply

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25o EIS Section 2.3.12 Ancillary Facilities provides a summary of the groundwater monitoring plan, stating that Midway would install two alluvial monitoring wells along the drainages west and south of the mine and downgradient of the proposed WRDA, heap, and TSF facilities, refers to figure 2.3-1 which shows t proposed locations of the wells, acknowledges that adjustments to this plan may be required depending groundwater conditions encountered in these wells, and notes that the wells would be sampled quarterly during operations. Figures 2.2-1, 2.3-1 and 2.3-11 show the preliminary alluvial monitoring well locatio

The BLM has added figure 3.2-5 to Section 3.2 showing drill hole locations within the fenced mine area through 2013, depth of drill hole, and observation of water ("wet" or "dry" hole). To date, seven deep d holes have encountered water. No shallow groundwater has been encountered.

If the Gold Rock Mine Project is approved, Midway would prepare and submit a WPCP application. Midway has been preparing for this process by meeting with hydrogeologic consultant and NDEP BMR

As part of the WPCP, the NDEP BMRR may not require shallow monitoring wells if water is not encountered, but may possibly require deep monitoring wells. Most likely, the wells would be installed ephemeral drainages downgradient of the WRDAs, heap, and TSF. Midway would develop the WPCP application after the preferred alternatives, in particular the TSF location, are selected and approved.

The BLM has added text to the description impacts under the Western Tailings Storage Facility Alternative, noting that:

"Figures 3.2-3 and 3.2-4 indicate that, in the deeper regional carbonate aquifer, groundwater flows from the northeast to the project area and afterward flows south toward regional groundwater discharge areas. As noted in Section 3.2, shallow, perched, groundwater aquifers have not been found in the proposed mi area, despite the installation of more than 600 boreholes. Therefore, it is anticipated that no shallow groundwater would be encountered in the vicinity of the alternate TSF location. However, at least three alluvial groundwater monitoring wells would be installed downgradient of the heap, waste rock disposal facilities and alternative TSF location. Figure 2.4-3 shows proposed locations of the monitoring wells. Midway would coordinate with NDEP during preparation of the application for a WPCP to determine th total number and location of monitoring wells. Adjustments to this plan may be required depending on groundwater conditions encountered in these wells. If water were encountered, Midway would conduct periodic monitoring as summarized in Section 2.3.12 and described in the groundwater monitoring plan appended to the Plan."

25p

The BLM expanded Section 3.2 to provide more detail regarding climate, surface water, groundwater, a regional springs. The text has also been expanded to provide more information regarding the potential f shallow, perched aquifers, noting that to date, no shallow groundwater has been encountered in the 646 boreholes advanced within the proposed fenced mine area. It is possible, however that some perched groundwater may be encountered, but these would be isolated and discontinuous, and not in connection with regional groundwater resources. The BLM has added Figure 3.2-5, showing drill hole locations in the fenced mine area.

wells. In addition, further baseline data are needed to demonstrate that Bull Spring and Bull Creek will not be affected by pumping from the basin-fill aquifer system. BLM's May 2015 Memo commits to include this information, as well as an additional requirement for water resources monitoring and mitigation for Bull Spring, Bull Creek, and associated surface water features, in the Final EIS.

Recommendations: EPA supports the commitments made in BLM's May 2015 Memo and specifically recommends that BLM include, in the Final EIS, greater detail regarding the hydrogeologic characteristics of the Basin-fill aquifer from which the proposed 2000 acre feet per year of supply water would be pumped, and a more detailed discussion of the Theis analysis performed. We also recommend that the Final EIS describe, in greater detail, the anticipated source of perennial flow in Bull Creek, and the project's potential to affect this flow. Clearly define all monitoring and mitigation measures, along with their anticipated effectiveness and enforcement mechanisms.

Air Quality

Page 4-34 of the DEIS indicates that the project would exceed the federal Prevention of Significant Degradation Class II increment standard for particulate matter of 2.5 micrometers in diameter or smaller (annual and 24-hour). Although PSD does not apply to the project area and no exceedance of the National Ambient Air Quality Standards is modeled, the exceedance of $PM_{2.5}$ increment values suggests that the project would result in substantial particulate emissions.

Recommendations: We recommend that additional particulate matter mitigation strategies be considered to reduce potential health-impacts associated with high levels of PM emissions within the project area. In addition to physical measures to limit the production of roadway exposed-surface related emissions, we offer the following suggestions for limiting vehicle and heavy machinery-related emissions:

- To the extent practicable, purchase or rent vehicles and machinery equipped with the highest tier engines available;
- Ensure that all vehicles are tuned to the engine manufacturer's specification;
- Do not allow idling of vehicles for more than five minutes (unless, in the case of certain drilling engines, it is necessary for the operating scope);
- Include particulate traps, oxidation catalysts and other suitable control devices on all construction equipment used at the Project site;
- Use diesel fuel having a sulfur content of 15 parts per million or less, or other suitable alternative diesel fuel, unless such fuel cannot be reasonably procured in the market area; and
- Include control devices to reduce air emissions. The determination of which equipment is suitable for control devices should be made by an independent Licensed Mechanical Engineer. Equipment suitable for control devices may include drilling equipment, generators, compressors, graders, bulldozers, and dump trucks.

Climate Change

On December 18, 2014, the Council on Environmental Quality released revised draft guidance for public comment that describes how Federal departments and agencies should consider the effects of greenhouse gas emissions and climate change in their National Environmental Policy Act reviews. This guidance explains that agencies should consider both the potential effects of a proposed action on

25q The BLM has revised Section 4.2, expanding the description of the Theis analysis and adding the results of the aquifer testing.

The BLM has added text to Sections 3.2 and 4.2 describing Big Bull Spring and potential impacts to the spring. Midway has committed to conduct quarterly visual monitoring of Green Springs and Big Bull Spring from at least one year prior to mine construction until active leaching and/or milling stops at the mine, if permission for access can be obtained. If visual monitoring indicates reduced flows, the proponent would initiate discussions with the BLM and begin investigations into why the observed reduction in flow has occurred. If a Gold Rock Mine-caused reduction in flow is determined to have occurred, discussions with the BLM on mitigation would be immediately initiated. The BLM has added this commitment to the table of Applicant-Committed Environmental Protection Measures (Table 2.3-8).

The BLM has added text and figures from the Midway Gold US Inc. Gold Rock Project Baseline Hydrogeology Report (Hatch 2015) and the DRAFT Gold Rock Project Baseline Hydrogeology Addendum (Hatch 2016) to Section 3.2 to provide a clearer description of the project area conditions.

25r Regarding $PM_{2.5}$, the BLM revised Table 3.7-2 to reflect revisions to the standards in 2014 and added text to section 3.7 noting that in Nevada incremental standards also exist for $PM_{2.5}$. The BLM also added text noting that PSD increments exist for sulfur dioxide, nitrogen dioxide, and PM_{10}. Specifically, for Class II areas, the annual PSD increment for nitrogen dioxide is 25 microns per cubic meter ($\mu g/m^3$); the annual and 24-hour increments for PM_{10} are 17 $\mu g/m^3$ and 30 $\mu g/m^3$; the annual and 24-hour $PM_{2.5}$ increments are 4 $\mu g/m^3$ and 9 $\mu g/m^3$; and the annual, 24-hour and 3-hour increments for sulfur dioxide are 20 $\mu g/m^3$, 91 $\mu g/m^3$, and 512 $\mu g/m^3$, respectively.

The BLM has added a subsection on PSD in section 4.7.3 of the FEIS. Text in the subsection summarizes applicability of PSD and clarifies that the Proposed Action does not belong in any of the listed 28 PSD source categories; therefore, the facility PSD permitting threshold is 250 tons per year or more for New Source Review pollutants. The air permit for this project would be issued after July 1, 2011, therefore the PSD permitting threshold for GHG emissions is 100,000 tons per year. The BLM has added a table that presents the estimated annual facility emissions in comparison to the PSD permitting threshold. The BLM has noted that fugitive dust emissions from blasting, loading, dumping, and haul road traffic are not included in the Potential To Emit (PTE) emissions as directed by EPA guidance (USEPA 1980). The BLM also has noted that a PSD permit is not expected to be required for the Gold Rock Mine Project because all PTE emissions are below PSD thresholds.

The BLM has added text to section 4.7.3 noting that even though the proposed project is not expected to trigger PSD or an evaluation with current and proposed increments, a comparison of the PSD Class II increments was reviewed as part of this air quality analysis. The air quality modeling analysis shows that the maximum predicted impacts would be located along the facility boundary and therefore only a small localized area may exceed the PSD Class II $PM_{2.5}$ increments. The facility would implement Applicant-Committed Environmental Protection Measures noted in Table 2.3-8 and would comply with any conditions established through the permitting process to minimize particulate matter emissions (especially from fugitive sources) and any resulting offsite impacts.

Regarding mitigation strategies, Table 1.9-1 notes that Midway would obtain an Air Quality Operating Permit from NDEP Bureau of Air Pollution Control (BAPC). Under state permitting requirements, Midway would be required to meet air quality standards. No exceedances of regulatory standards are anticipated to occur during operation of the mine facilities. If no exceedances are anticipated, the BLM does not require mitigation. The BLM has forwarded the EPA's recommendations to Midway for consideration.

Section 2.3.4 notes that Midway has designed haul roads to support the use of both haul trucks and conveyors. The decision to use trucks or conveyors would be based on metallurgy, volume of PAG that would require more special handling, and the ability to maintain the necessary operational flexibility.

climate change, as indicated by its estimated greenhouse gas emissions, and the implications of climate change for the environmental effects of a proposed action.

While the DEIS addresses the subject of climate change and does include both a calculation of the project's approximate CO_2 emissions and a discussion of climate change's potential impact upon the project, it does not discuss potential mitigation measures for reducing or minimizing greenhouse gas emissions.

> *Recommendations*: Consider potential mitigation measures for reducing greenhouse gas emissions. Identify, in the FEIS, all relevant, reasonable mitigation measures that could reduce greenhouse gas emissions, even if they are outside the jurisdiction of the BLM, and thus would not be committed to as part of BLM's Record of Decision[1]. We offer the following potential measures for the BLM's consideration:
>
> - Incorporate energy efficiency measures and appropriate alternative energy components into the project, such as on-site solar and/or geothermal power generation;
> - Use conveyors rather than haul trucks wherever feasible, e.g., for transporting ore to processing areas and the heap leach facility; and
> - Offer ride sharing or shuttle opportunities for mine employees commuting to the site from both nearby and distant communities.

Sage Grouse

Figures 3.9-6 and 4.9-1 indicate that most of the project lies within preliminary general habitat for the greater sage grouse. In addition, the primary access routes for the project and the proposed power line routes (all alternatives) bisect preliminary priority habitat (p. 3-75, 4-57). According to the DEIS, no site-specific noise modeling or monitoring has been conducted for the Gold Rock Mine project. BLM's May 2015 Memo indicates that site-specific baseline noise monitoring for sage grouse, which will determine ambient noise levels for leks near the project, is planned for 2016.

For the purposes of the analysis provided in the DEIS, information from other studies was used to estimate ambient noise levels (p. 4-65). Based on that analysis, the DEIS identifies noise and traffic-related impacts upon greater sage grouse as significant. It states that, if ambient noise thresholds are exceeded by the Project during the breeding season without mitigation, this could ultimately result in a decrease in the number of males and females attending the affected leks, and this effect may persist even after sources of noise have ceased (p. 4-67). The DEIS proposes monitoring and mitigation measures to offset noise related impacts to greater-sage grouse; however, the measures described are general and rely upon a more detailed monitoring and mitigation plan that has yet to be developed. In addition, the DEIS states that sage grouse mortality could occur due to direct vehicle collisions along the project access roads; however, no additional mitigation is discussed to offset this impact.

> *Recommendations:* Include the site-specific baseline noise monitoring analysis in the Final EIS, as well as the noise impact mitigation and monitoring plan that is identified as needed. Include, also, projected noise levels that would result from the proposed action, and discuss potential impacts with

1 As explained in the Council on Environmental Quality's Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, "This will serve to [46 FR 18032] alert agencies or officials who can implement these extra measures, and will encourage them to do so."

25r, *cont.* Table 2.3-8 presents Midway's Applicant-Committed Environmental Protection Measures for air quality:

- Comply with NDEP air permits.
- Where feasible and to the extent practicable, purchase or rent vehicles and machinery equipped with th highest tier engines available.
- Where feasible and to the extent practicable, use diesel fuel having lower sulfur content.
- Maintain equipment to the manufacturer's specifications to ensure proper function.
- Use dust abatement techniques on unpaved, unvegetated surfaces to minimize airborne dust.
- Post and enforce appropriate speed limits in the Plan area.

Text in section 4.7.3 notes that environmental protection measures for fugitive dust could include dust control using water. The text also notes that fugitive dust from construction activities would be mitigated through the use of best management practices detailed in a Fugitive Dust Control Plan that would be developed as a mandatory part of Nevada air permitting process. The BLM has added text from the Plan, noting chemical application as another possible dust control measure.

Section 4.7.3 also notes that "A standard control would include managing vehicular speed limits on roads within the Pl area. To further minimize fugitive dust, soils would be stabilized as soon as possible after disturbance. Construction equipment may be equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides and diesel particulate emissions. Combustion sources are typically controlled by catalytic oxidizers. Vehicles would be maintained to the manufacturer's specifications. Controls such as application of water would be used to manage fugitive emissions during material handling processes such as rock crushing. It is anticipated that these measures would be effective in minimizin the generation of fugitive dust and related impacts."

25s The BLM has re-organized and updated the description of greenhouse gas emissions in section 3.7 with additional cont related to scientific evidence and references associated to climate change. The BLM has added a summary of the U.S. Global Change Research Program (USGCRP) reports for the southwest region, which includes the Plan area. An additi al description of the federal GHG reporting program was also added. The BLM also has added text to section 4.7.3 Air Quality, Proposed Action, and to appropriate physical and biological resource sections in Chapter 5 Cumulative Effects

regard to sage grouse habitat utilization. If the noise threshold exceedences would be expected to result in a decreased number of sage grouse utilizing the nearby leks, discuss mitigation measures that would avoid or minimize this impact. In addition, identify measures that could mitigate for the direct take of sage grouse resulting from vehicle collisions.

Surface Water

Section 3.2 of the DEIS indicates that no jurisdictional waters of the United States would be impacted by the proposed project. In support of this conclusion, the DEIS states that "surveys identified partially scoured channel beds in several of the largest intermittent tributaries however, they determined that water flowed in these channels only for a few days following heavy precipitation and at no other time. Consequently, no jurisdictional waters of the U.S. were identified" (p. 3-2). This is an inappropriate basis for concluding that waters are not jurisdictional. A jurisdictional determination depends not on the frequency with which flow occurs in the channels, but on whether those channels have a "significant nexus" to jurisdictional waters.

Recommendations: Revise the discussion of Clean Water Act jurisdiction to address the question of whether or not the identified drainages have a "significant nexus" to jurisdictional waters.

Chapters 2, 3 and 4 of the DEIS use the terms "intermittent" and "ephemeral" interchangeably to describe surface water features within the project area and EIS study area. Based upon communication with BLM staff, EPA understands that the surface water features on-site would be more accurately characterized as ephemeral.

Recommendations: We recommend that the EIS consistently use the word "ephemeral" to describe the surface water features that flow only in immediate response to storm events. "Intermittent" should be used to describe surface waters that flow for a portion of the year (throughout the spring, for example), but cease to flow for a portion of the year.

Figure 3.2-1 is the primary map provided in the DEIS for identifying surface water features in the project vicinity. Unfortunately, this map is small and of low resolution. It is difficult, for example, to determine where project facilities would lie in relation to surface water drainages. In its May 2015 Memo, BLM commits to provide a clear, more detailed map to replace this figure.

Recommendation:
Include, in the FEIS, a clear and more detailed map to replace Figure 3.2-1.

25t As noted in chapter 4, site-specific noise monitoring originally scheduled for spring 2015 was delayed until 2016 and is currently proposed to be performed one year prior to construction. Therefore, the impact analysis in the EIS relies upon best available information from other studies conducted in similar habitats as the basis for the analysis. Possible mitigation measures that could be included in the plan are summarized in Section 4.9.11 (FEIS Section 4.9.12). As noted in Section 4.9.11 (FEIS Section 4.9.12), Midway would be required to submit a noise monitoring and mitigation plan subject to BLM approval.

25u The BLM has added text to Section 3.2 clarifying that most of the Plan area's topography slopes west and south to a closed depression of about 50 to 60 square miles, located in Railroad Valley about 40 miles south of the Plan area. A smaller northern portion of the site slopes northward, toward Newark "Lake," which is another large closed depression about 30 miles north, in Newark Valley. Neither of these depressions has any outlet, nor is tributary in any other way to any interstate or navigable water. Therefore, there is no "significant nexus" and there are no jurisdictional waters of the U.S. within the Plan area (Juncosa 2015).

25v In the study period from 2011 through 2014, though rainfall (occasionally heavy) has occurred many times, surface water was observed in a bed-and-bank feature in the Study Area on only one occasion, in portions of a segment of a few hundred feet in length where bedrock is exposed at the surface. During the study period, no surface flow has been seen in any channel or valley with alluvial bed materials. Evidence of past flow in such features can be discerned in a small fraction of the length of a few of these alluvial channels (Juncosa 2015). Consequently, the BLM revised the text as noted in the EPA's comment, using the term "ephemeral" to describe drainages in the Plan area.

25w The BLM reviewed Figure 3.2-1 and has removed it from the document per the EPAs comment. Any features shown on former 3.2-1 can be found more clearly throughout the new figures 3.2-1 through 3.2-10.

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

November 5, 2013

Dan Netcher
Bureau of Land Management
Ely Field Office
HC33 Box 33500
Ely, NV 89301

Subject: Gold Rock Mine Project Notice of Intent to Prepare an Environmental Impact Statement, White Pine County, Nevada

Dear Mr. Netcher:

The U.S. Environmental Protection Agency (EPA) has reviewed your Notice of Intent to prepare an Environmental Impact Statement (EIS) for the above referenced project. Our comments are provided pursuant to the National Environmental Policy Act (NEPA) and the Council on Environmental Quality's NEPA Implementation Regulations at 40 CFR 1500-1508.

The scope of subjects that should be included in the EIS is described in the enclosed detailed comments. Topics include geochemistry, water resources, air quality, vegetation and wildlife, mining waste, reclamation and post-closure management, cumulative impacts, mitigation and monitoring, among others.

We appreciate the opportunity to review this scoping notice. Please provide one hard copy of the Draft EIS to this office (mailcode CED-2) when it is electronically submitted to EPA's EIS submittal tool, *e-NEPA*. If you have questions, please contact me at (415) 972-3853 or geselbracht.jeanne@epa.gov.

Sincerely,

Jeanne Geselbracht
Environmental Review Office

Enclosure: EPA Detailed Scoping Comments

cc: Bruce Holmgren, NDEP

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Sincerely,

Jeanne Geselbracht
Environmental Review Office

Enclosure: EPA Detailed Scoping Comments

cc: Bruce Holmgren, NDEP

RESPONSES TO LETTER 26

26a Thank you for your comments.

26b Please see responses to comments 25k through 25w and responses to comments 26d through 26bs for detailed information regarding each of these topics.

26c The BLM sent a hard copy of the Draft EIS and will send a hard copy of the FEIS to the EPA's Region IX office in California, as requested.

Gold Rock Mine Project
EPA Detailed Scoping Comments – November, 2013

General Comments

The EIS should demonstrate that all reasonable alternatives to proposed actions have been examined and that appropriate mitigation measures have been thoroughly considered and incorporated into the project. The EIS should provide substantial detail on the means of implementing mitigation measures, and should also identify how monitoring would be established to ensure compliance and assess effectiveness of mitigation. 5d

In accordance with 40 CFR 1502.24, agencies are required to insure the professional integrity, including scientific integrity, of the discussions and analyses in the EIS. Any methodologies used should be identified, and the scientific and other sources relied upon for conclusions in the statement should be explicitly referenced. 5e

Purpose and Need

EPA recommends the EIS include a clear description of the project's purpose and need. The EIS should adequately identify and describe the underlying need(s) for the project and the associated objectives or outcomes. Clear descriptions of project needs and objectives set the stage for thorough consideration of a range of alternatives and their effectiveness in meeting the needs and objectives of the project. 6f

Alternatives

The EIS should rigorously explore and objectively evaluate all reasonable alternatives, including reasonable alternatives not within the jurisdiction of your agency. 40 CFR 1502.14. The EIS should provide a clear discussion of the reasons for the elimination of alternatives which were not evaluated in detail. The document should discuss potential environmental impacts of the alternatives in comparative form, thus sharply defining the issues among the options for decision makers and the public. 40 CFR 1502.14. Reasonable alternatives could include, but are not necessarily limited to, alternative sites or alternative designs for major mining facilities (e.g., waste rock piles, tailings, or heap leach facilities), smaller project, different pit geometries, and pit backfilling. Alternatives, including the No Action Alternative, may also depend on the validity of mining claims. The EIS should identify the lode and mill site claims that are included in the proposed project and discuss their validity. The EIS should discuss the alternatives in the context of the validity of claims and BLM's authorities under the Mining Law, the Federal Land Policy and Management Act, and other relevant statutes and regulations. 6g

Mitigation

The EIS should thoroughly identify and describe appropriate mitigation measures associated with the project, specifying which ones would be committed to by the mine operator and/or required by the BLM or other federal, state, or local agency. The EIS should address how each measure would specifically mitigate the targeted impact, provide substantial detail on the means 6h

26d Section 2.3 describes the Proposed Action and section 2.4 describes alternatives. The impact analyses and any proposed mitigation measures are presented by resource section in chapter 4. Monitoring and mitigation measures for soils, their effectiveness and effects on other resources are noted in Section 4.5.11 (FEIS Section 4.5.12); for prime and unique farmland, in Section 4.6.11 (FEIS Section 4.6.12); for wildlife including Greater Sage-Grouse, mule deer, pygmy rabbit, and ferruginous hawks, in Section 4.9.11 (FEIS Section 4.9.12); for livestock, in Section 4.10.11 (FEIS Section 4.10.12); for cultural resources, in Section 4.13.11 (FEIS Section 4.13.12); for Native American Religious and Traditional Values, in Section 4.14.11 (FEIS Section 4.14.12).

For further information on Tribal monitors please see response to comment 24b.

26e Thank you for your comment.

26f The Purpose and Need is described in Section 1.3 Agency Purpose and Need.

26g Section 2.4 describes alternatives evaluated in this EIS. Section 2.5 describes alternatives considered but not carried forward for detailed analysis. Table 2.6-1 Summary of Environmental Effects presents a summary and comparison of potential effects from the Proposed Action and alternatives. Chapter 4 Environmental Consequences presents detailed descriptions of potential effects for specific resources.

Section 3.15 describes existing conditions in the project area related to land use authorization and access. Table 3.15-2 presents the BLM's Legacy Rehost 2000 System records for active mining claims within the Plan area and Proposed Action power line corridor.

Section 1.8 describes the BLM's authority under the Mining Law of 1872, Federal Land Policy Management Act of 1976, and other relevant statutes and regulations.

26h Section 4.1.7 presents the types of monitoring and mitigation measures developed as part of the impact analysis. Monitoring and mitigation measures for soils, their effectiveness and effects on other resources are noted in Section 4.5.11 (FEIS Section 4.5.12); for prime and unique farmland, in Section 4.6.11 (FEIS Section 4.6.12); for wildlife including Greater Sage-Grouse, mule deer, pygmy rabbit, and ferruginous hawks, in Section 4.9.11 (FEIS Section 4.9.12); for livestock, in Section 4.10.11 (FEIS Section 4.10.12); for cultural resources, in Section 4.13.11 (FEIS Section 4.13.12); for Native American Religious and Traditional Values, in Section 4.14.11 (FEIS Section 4.14.12).

of implementing each mitigation measure, identify who would be responsible for implementing it, indicate whether it is enforceable, and describe its anticipated effectiveness. For some impacts, there may be several appropriate and effective measures. Conversely, some measures may turn out to be less effective than anticipated; therefore, implementation and effectiveness monitoring should be conducted and contingency measures should be considered. We recommend the EIS describe the implementation and effectiveness monitoring that would be conducted and contingency measures that would be applied if initial mitigation measures fail.

Water Resources

1. The EIS should provide a complete hydrologic characterization of the project vicinity and the cumulative impact area, describing all existing water resources and baseline groundwater and surface water quality, quantity, flow regimes, and groundwater adjudication. Information on groundwater properties and groundwater/surface water connections (e.g., springs, seeps, interception of the water table by existing or proposed mine pits, etc.) are needed to identify and assess potential impacts to water resources and risks to receptors of contaminants.

2. The EIS should completely describe the pre-mining and current drainage patterns in the project area, as well as the projected drainage patterns (including post-closure drainage patterns) under each alternative.. Include hydrologic and topographic maps of the project area and cumulative impact area. This discussion should address potential effects of the project on erosion potential and sedimentation. Identify any components of the proposed project that would fall within 25- and 100-year flood plains. Discuss the potential for runoff to transport sediment or contaminants from disturbed areas at the mine to any surface waters.

3. The EIS should describe the applicable permits and state-adopted, EPA-approved water quality standards, including beneficial uses, in the project area, and discuss each alternative's compliance with the standards and permits.

4. The EIS should discuss the applicability of Nevada's General Permit for Stormwater Discharges Associated with Industrial Activity from Metal Mining Activities to this project. The EIS should include a storm water pollution prevention plan and discuss specific mitigation measures that may be necessary during operations, closure, and post-closure. The EIS should describe how the mine will achieve zero discharge for all phases of the project.

5. The EIS should describe all existing and potential future surface water discharges from the project, including storm water, and include a map depicting locations of all discharge outfalls. The EIS should also provide past and current monitoring results and trends for surface water and groundwater quality at the original Easy Junior Mine, as well as the recently completed monitoring wells, and discuss their relevance in predicting the potential for, and protecting against, contaminated drainage from the existing and future waste rock disposal areas and heap leach pad. Specifically, we recommend that the EIS include:

- A discussion of all monitoring that was conducted at the heap leach pad, waste rock disposal area, and process or other areas during and after the Easy Junior Mine

26i The BLM added information regarding hydrologic characterization, including text and figures and reference to the Baseline Hydrogeology Report (Hatch 2015) and DRAFT Gold Rock Project Baseline Hydrogeology Addendum (Hatch 2016).

26j Sections 2.3.10 and 2.3.16 describe stormwater management proposed during construction, operation, and closure. Section 2.3.10 presents a summary of the Stormwater Management Plan included as an appendix to the Plan of Operations (Midway 2013a). Table 2.3-8 presents Applicant-Committed Environmental Protection Measures. Section 3.2 describes existing conditions related to water resources and includes an investigation of FEMA flood hazard maps, noting that available maps do not show 25 - or 100-year flood plains in the project area. Surface waters and drainages within the project area are described as ephemeral and only respond to meteoric events. The nearest perennial drainage is Bull Creek, 3.2 miles to the south of the Plan area boundary.

The BLM has incorporated additional hydrologic information from the baseline hydrogeology report (Hatch 2015) and the DRAFT Gold Rock Project Baseline Hydrogeology Addendum (Hatch 2016).

Section 4.2 describes the impact analysis for all alternatives related to water resources. Section 4.2 notes that project activities have a low potential to lead to erosion and sedimentation; however, because surface water is generally not present and stormwater would be managed on-site, these effects are expected to be minimal.

26k Table 1.9-1 presents the permits anticipated to be required for the Gold Rock Mine Project. Section 3.2 describes existing conditions related to water resources, noting that no perennial streams are located within the Plan area. Stormwater would be managed on site. Section 3.10 notes that no water sources used for livestock watering are present in the Plan area.

26l Table 1.9-1 presents the permits anticipated to be required for the Gold Rock Mine Project. Sections 2.3.10 and 2.3.16 describe stormwater management proposed during construction, operation, and closure. Section 2.3.10 presents a summary of the Stormwater Management Plan included as an appendix to the Plan of Operations (Midway 2013a).

26m Regarding monitoring conducted during and after operation of the Easy Junior Mine, Section 3.2 includes a summary of heap draindown monitoring sample results. The BLM has expanded text in Section 3.2 to include a summary of available information regarding sampling activities at the Easy Junior Mine during and after operations, including whole rock analysis, acid-base accounting, meteoric water mobility profile analysis, and humidity cell test analysis.

Table 2.3-8 provides information regarding the Applicant-Committed EPMs that would be used to minimize or eliminate surface and groundwater quality impacts that may arise from project activities.
See also response to comment 26j.

operations, and the results of that monitoring (e.g., any toe seepage collected after storms, stormwater samples, vadose zone samples, etc.). If such information is not available, an effort should be made during EIS preparation to inspect for seeps at the existing facilities, particularly after storms, and sample any stormwater and mine drainage so this information can be used to inform water quality predictions and develop appropriate mitigation measures specific to the proposed project;

- Information on the actual draindown water quality, meteoric water infiltration rates, and rates of draindown from the Easy Junior heap leach pad taken during and after heap closure. We recommend that this information be used to inform and ground truth the Heap Leach Draindown Estimator (HLDE) modeling conducted for the proposed new heap leach pad.

6. The EIS should discuss all direct, indirect, and cumulative impacts to surface water and groundwater quality and quantity from the proposed project and alternatives both during operations and after closure, including any ore processing that would take place off-site. Effective chemical and/or physical controls to prevent uncontrolled seepage through waste rock, stockpiles, tailings, and spent ore should be thoroughly analyzed in the EIS. The EIS should describe all potential project discharges, seepage, temporary ponding, diversions, and groundwater pumping, as well as the potential effects of these activities on water rights, beneficial uses, and wildlife.

- Discuss the potential for contamination of meteoric water that contacts existing and proposed waste rock, tailings, heap leach ore, stockpiles, roads, and other mine facilities.
- Describe the projected chemical characterization of water in open ponds that would be located at the site, including temporarily ponded meteoric water in the mine pit following closure.
- Discuss the potential for and effects of movement of any contaminated surface water to the subsurface.
- Describe the designs of the existing and proposed run-on/run-off channels, tailings dam, seepage collection systems, collection and sedimentation ponds, pump back systems, and any necessary treatment or disposal of these solutions. Depict these facilities on a map.
- The Gold Rock Conceptual Engineering Design for Heap Leach Pad and Tailings Storage Facilities (p. 20) indicates that sediment volumes for the proposed project are based on calculations for the Pan Mine project. Use of Pan Mine sedimentation rates for the Gold Rock Mine should be justified.
- Describe mitigation measures to prevent contamination of water and sediment.

7. The EIS should discuss how accidental releases of hazardous materials would be handled. Identify the potential impacts of failure of the solution containment systems, methods for discovering such failures, and the degree to which impacts would be reversible. Describe the mine's petroleum-contaminated soil management plan.

26n The facility would be operated as a zero discharge facility. Section 2.3 describes the design of facilities, water use, handling of materials, stormwater control structures and management plans, containment structures, leak detection systems, proposed monitoring wells, and other Applicant-Committed EPMs intended to minimize impacts to resources including surface water and groundwater. No off-site ore processing is proposed. No pit lake formation is anticipated. Figures in Section 2.3 show facility features. Section 4.2 describes impact analysis related to water resources, including water rights. Section 5.5 describes cumulative effects analysis related to water resources, including water rights. Section 4.9 describes impact analysis related to wildlife.

Midway used Pan Mine sedimentation rates because that the geology, types and distribution of soils and the terrain at the Gold Rock Mine Project are similar to those found at the Pan Mine. The BLM added text to Section 3.2 noting the similarities in geology between the two sites.

26o Section 2.3.14 summarizes the Spill Contingency/Emergency Response Plan (SCERP) included as an appendix to the Plan of Operations (Midway Gold 2013a). The text in this section of the EIS describes the process for approval of the SCERP, distribution, and planned response if a reportable spill occurs. Section 2.3.12 Ancillary Facilities, Petroleum-Contaminated Soil Storage Area summarizes the petroleum-contaminated soil management plan included as appendix H of the Plan of Operations (Midway 2013a). This section of the EIS describes sampling and characterization requirements and the appropriate removal and shipping that would be performed. No changes related to this comment have been made to the EIS.

8. The EIS should identify potential water sources and the amount of water needed for the project, and describe the potential impacts associated with using these sources. The EIS should identify direct, indirect, and cumulative impacts to surface water flow, water supply wells, wetlands, springs and seeps, vegetation, wildlife, and other groundwater-dependent resources as a result of groundwater pumping associated with the proposed project. Describe post-closure groundwater elevation recovery. 26p

9. BLM should coordinate with the U.S. Army Corps of Engineers to determine whether the proposed project requires a Clean Water Act Section 404 permit for discharge of dredged or fill material into waters of the United States, including wetlands and other "special aquatic sites." The EIS should describe all waters of the U.S. that could be affected by the project, including past impacts, and specify acreages and channel lengths, habitat types, values, and functions of these waters. The EIS should describe the potential environmental impacts and discuss alternatives to avoid or minimize those discharges. 26q

10. The EIS should describe procedures for water quality and quantity monitoring and reporting. The EIS should also describe procedures for monitoring the functioning of the waste rock dumps, stock piles, tailings, and heap leach pad in controlling contact between this material and surface or meteoric water (e.g., maintenance of run on/runoff channels, liners, underdrains, seepage collection areas, growth medium covers; ponding on top of facilities; etc.). Describe all monitoring locations for surface water, ponded water, and collected seepage; groundwater monitoring wells; and points of compliance on the site. The EIS should discuss monitoring frequencies, screening intervals, and parameters to be monitored during all phases of the project, including post-closure. 26r

We note that the monitoring well to the west of the mine is approximately one mile away from the proposed heap leach pad and south waste rock disposal area. While this well would potentially intercept alluvial water draining from facilities on the western side of the mine property, we recommend that installation of additional wells immediately downgradient of the heap and south waste rock disposal area be seriously considered so any changes or trends in water quality could be more quickly identified and controlled.

Geochemistry

Accurate characterization of the mine's geochemistry is critical in properly identifying the project's potential impacts and addressing them through facility design and mitigation measures. The EIS should discuss the mine's geochemistry, including the neutralization/acid generation potential (NP/AP) and non-acidic chemical leaching potential of the waste rock, pit wall rock, ore, and tailings. Describe the static and humidity cell tests (HCT) that have been conducted on ore and waste rock to characterize them, and provide a summary the test results. Figure 3 of the February 2013 *Draft Baseline Geochemistry and Waste Rock Handling Report* depicts the static and kinetic test sampling locations within the proposed pit area. The EIS should include this figure and describe and provide a thorough discussion of sample representativeness. We have the 26s

26p Section 3.2 describes existing conditions related to water resources. Section 4.2 describes potential impacts to water resources, including changes in groundwater elevation. Section 5.5 describes cumulative effects to water resources. Section 4.8 describes potential impacts to vegetation. Section 4.9 describes potential impacts to wildlife, including the Railroad Valley springfish. The BLM has incorporated information related to groundwater pumping from the baseline hydrogeology report (Hatch 2015) and the DRAFT Gold Rock Project Baseline Hydrogeology Addendum (Hatch 2016) to Sections 3.2 and 4.2.

26q Section 3.2 Water Resources, Existing Conditions, Surface Water describes field surveys for Waters of the U.S. Impacts to water resources are described in Section 4.2.

26r Section 2.3.5 Waste Rock Disposal Areas describes construction and operation of the WRDAs, including testing and placement of PAG in designated areas that would be covered with a final layer of 10 feet of high-carbonate material and 1 foot of growth media. Section 2.3.6 Heap Leach Facilities describes the construction and operation of the heap. Section 2.3.7 Processing Ponds and Carbon-In-Columns Processing Plant describes the leak collection and recovery system that would be installed at the processing ponds. Section 2.3.9 Tailings Storage Facility describes the construction and operation of the TSF. The BLM has expanded this section, adding text from the Plan regarding the pump-back system and installation and monitoring of piezometers. Section 2.3.10 summarizes the stormwater management plan appended to the Plan of Operations (Midway 2013a). Section 2.3.12 Ancillary Facilities, Monitoring Wells summarizes the proposed groundwater monitoring and refers to the groundwater monitoring plan appended to the Plan of Operations (Midway 2013a). The groundwater monitoring plan presents monitoring methods, analyses to be performed, and the proposed schedule for monitoring. Proposed monitoring well locations are shown on figure 2.3-1. Locations of monitoring wells would be finalized in coordination with NDEP and the BLM during the Water Pollution Control Permit application process. The BLM has added text noting that Midway proposes to perform quarterly monitoring of any installed monitoring wells.

Section 2.3.14 Emergency Planning and Response notes that Midway would develop a fluid management and monitoring plan as part of its WPCP application and indicates that "The FMMP would describe the containment systems and procedures for monitoring and controlling process solutions at the heap leach pad, process ponds, process plant, mill, CIL, and TSF during normal operating conditions, and during unusual natural or operational events."

Section 2.3.16 Reclamation Plan describes the decommissioning, grading, reclamation and monitoring of the facilities upon closure.

Section 3.2 Water Resources, Existing Conditions, Surface Water, notes that water was observed flowing in project area drainages only for a few days following heavy precipitation and at no other time. No surface water is present in the Plan area and no surface water quality sampling has been proposed.

26s Sections 2.3.5 Waste Rock Disposal Areas notes that the Baseline Geochemistry and Waste Rock Handling Report (Interralogic 2013a) is appended to the Plan of Operations (Midway 2013a) and that results of geochemical testing performed on representative samples is summarized in Section 3.2. Figure 2.3-6 presents an adaptation of figure 3 of the Draft Baseline Geochemistry and Waste Rock Handling Report, which is appended to the Plan of Operations (Midway 2013a). Section 3.2 Water Resources, Existing Conditions, Water Quality present a summary of the Baseline Geochemistry and Waste Rock Handling Report (Interralogic 2013a).

The BLM expanded the text in Section 3.2, further describing the testing methodology, number of samples, and results for the waste rock that would be generated during operations.

The BLM also has included a summary of geochemical testing results for samples collected at the nearby Pan Mine. The Pan Mine geochemical sample results suggest the comparative nature of the rock types between the Pan Project and the Gold Rock Project.

The BLM expanded text in Section 4.2, noting the design measures and other Applicant-Committed EPMs that would be implemented to minimize or eliminate potential impacts.

6s, ont. following comments about the geochemical characterization presented in the *Draft Baseline Geochemistry and Waste Rock Handling Report.*

1. It is unclear from the *Draft Baseline Geochemistry and Waste Rock Handling Report* that sampling and testing conducted to date are sufficiently representative of the waste rock at the Gold Rock mine to accurately characterize the geochemistry and make reliable predictions about how mine rock will react over the long term. We recommend that, as a reference for the EIS, the *Draft Baseline Geochemistry and Waste Rock Handling Report* include additional information to support its conclusions, by further addressing the following issues. 6t

- The proposed project would produce 170 million tons of waste rock of several different rock types, but acid-base accounting and whole rock analysis were conducted on only 124 waste rock samples. While the report references the 2009 Mine Environment Neutral Drainage (MEND) Prediction Manual recommendations regarding a phased approach to sample collection, it does not provide evidence to support a conclusion that, based on block modeling, the samples tested thus far represent an appropriate "starting point" for sufficient data gathering for the EIS and informed decision making. Also, please see comments 3 and 4 on the next page. 6u

- The results of the whole rock analyses are not included in the *Draft Baseline Geochemistry and Waste Rock Handling Report* except for those conducted on the eight HCT samples. This information should be provided, including all analysis conducted on Easy Junior samples. 6v

- It appears from Figure 3 that no pit samples from beneath the existing Easy Junior heap leach facility were included in the geochemical testing for the proposed project. This is a large data gap, and should be addressed in light of the fact that this unrepresented area accounts for approximately one-third of the proposed pit area. 6w

- The majority of carbonized limestone samples had NP/AP less than 3:1, but the sole HCT conducted for this rock type was a sample with an NP/AP of 117. How will this information be used to determine thresholds for PAG/non-PAG handling designations? 6x

- One-third of argillized Chainman Shale samples had NP/AP less than 1:1, but neither of the two HCTs conducted for this rock type had NP/AP less than 1:1. How will this information be used to determine thresholds for PAG/non-PAG handling designations? 6y

- Waste rock from the Easy Junior waste rock disposal area does not appear to be included in samples that were tested. Please see next comment. 6z

2. The EIS should describe the results of all static and kinetic testing originally conducted on core samples for the Easy Junior pit. We recommend that follow up testing be conducted on representative samples of the Easy Junior waste rock from the existing waste rock disposal area, if this has not already been done. These results should be compared against the original 6aa

26t Please see responses to comments 26u through 26z.

26u Section 3.2 Water Resources, Existing Conditions, Water Quality notes that rock samples for geochemical testing were selected in proportion to the footages of waste rock encountered in the drill holes and by rock type, and were representative of the five dominant rock types. The BLM has added text noting that the geologic and geochemical characteristics of the nearby Pan Mine provide support for the findings in the baseline geochemical report.

26v The BLM added a summary of the whole rock analysis provided in the Baseline Geochemistry and Waste Rock Handling Report to Section 3.2.2, noting that the results are consistent with the lithologies observed (limestone, dolomite), and are depleted in metals and other elements, including aluminum, iron, and manganese. Arsenic and sulfur are shown to be above the expected content for igneous rocks. Ore samples have higher than average values for arsenic, mercury, and thallium when compared to waste samples.

The BLM expanded text in Section 3.2, providing a brief description of the whole rock analysis results performed on 157 samples as presented in the draft Baseline Geochemistry and Waste Rock Handling report (Interralogic 2013). The results of the analysis are presented in Table 6 of that report.

26w Samples were not collected from beneath the existing Easy Junior heap leach pile due to the challenges of advancing boreholes through the heap leach pile.

Additionally, the Easy Junior heap leach pile material would be used as overliner material or placed on the proposed heap leach pad and re-leached. As the Easy Junior heap leach pile is relocated and the proposed Gold Rock pit is developed in this area, samples would be taken as part of the adaptive management plan (noted in Section 2.3.5 Waste Rock Disposal Areas) and would become part of the characterization.

26x Midway would develop thresholds during development of its Nevada Division of Environmental Protection Bureau of Mining Regulation and Reclamation Water Pollution Control Plan permit application.

26y Please see response to comment 26x.

26z Please see response to comment 26aa.

26aa The BLM added a summary of results of historical quarterly monitoring Alta Gold's Easy Junior Water Pollution Control Permit, and on testing performed on waste rock samples to Section 3.2.

predictions of the Easy Junior waste rock, as well as the results of the follow up monitoring which we recommend in comment #5 in the Water Resources section above. The EIS should discuss all of this Easy Junior information in the context of the overall geochemistry of the proposed Gold Rock project, and the proposed north waste rock disposal area in particular.

6aa, *ont.*

3. The Gold Rock Project Plan of Operations (POO) (p. 2-15) states: "Based on the geochemical characteristics of the waste rock from the Gold Rock Pit, Midway will use an adaptive management approach to further refine the understanding of the potential for waste rock to actually generate acid and metals leaching through ongoing testing of the waste rock. Based on existing HCT data, a portion of the PAG [potentially acid generating] material will require storage in designated PAG areas…; however, most of the material is expected to be NAG [non-PAG]. The actual percentage will be determined during additional block modeling, ongoing HCT testing, and operational sampling and analysis during mining." It does not appear that HCTs are ongoing; nor is it clear when additional block modeling would be conducted to facilitate designation of PAG and non-PAG rock. While adaptive management based on better understanding gained from these activities throughout mine life is encouraged, it is unclear whether representative sampling and testing have been conducted to characterize mine rock as accurately as possible to make reliable predictions about the proposed project's potential impacts. Adaptive management is not a substitute for taking a "hard look" at a project's potential impacts during the EIS process, before the project is permitted. The amount of PAG rock and metal-leaching rock that will need isolation or other special handling should be disclosed in the EIS so informed decisions about appropriate design and mitigation measures are made before the project is permitted.

6ab

4. The *Draft Baseline Geochemistry and Waste Rock Handling Report* (p. 29) states that PAG waste rock material will be identified during mining, and standard ore control protocols such as visual inspection, blast-hole sampling, and on- or off-site geochemical analysis would be conducted, and that waste rock will be categorized into three types for handling/disposal: (1) limestone and calcareous shale waste rock that will not require special handling, (2) low NP and low AP rock that may require special handling but is generally non-PAG, and (3) PAG rock with moderate sulfur content (generally between 1.5 and 3 percent) and low NP. The EIS should identify the protocols and specific parameters and thresholds that would be used to categorize these waste rock types, and specify how each category would be handled and disposed. Each designation threshold (e.g., 1.5 - 3 percent sulfur content and "low NP") should be well supported by the geochemical evidence. For example, HCTs were not conducted on samples with low sulfur content and very low neutralizing potential for rock types such as carbonized limestone, argillized Chainman Shale, and silicified limestone; however, categorization thresholds will be applied to these rock types. The EIS should explain how each categorization threshold will be determined for each rock type.

6ac

5. In several figures in the *Draft Baseline Geochemistry and Waste Rock Handling Report,* "low calcium samples" and "high calcium samples" are depicted, but these designations are not defined for purposes of characterizing the rock. Please provide descriptions for these terms.

6ad

26ab Regarding timing of additional modeling, Section 2.3.5 Waste Rock Disposal Areas states: "The actual percentage would be determined during additional block modeling, ongoing testing, and operational sampling and analysis during mining (Interralogic 2013a)." Please note the text "operational sampling and analysis during mining."

Regarding representativeness of the sampling, please see response to comment 26u.

EIS section 4.2.3 Water Resources, Proposed Action, Operation and Maintenance, Groundwater (page 4-8) describes geochemical testing results, notes the neutralizing potential of material at the site, indicates that although significant testing has been done, additional testing would be on-going during operations, and states that during operations the waste rock sampling program would be reviewed by NDEP and the BLM to determine if an adaptive management plan is necessary. The BLM has clarified the geochemical information presented in EIS Section 4.2.3 Water Resources, Proposed Action (page 4-7 and 4-8), noting that Midway would conduct additional on-site testing during mining to determine whether there is a need to place the material in a PAG management area, or whether the material could be comingled with other non-PAG material for which no special handling is necessary.

Regarding the amount of material needed to isolate PAG, text in Section 3.2 Water Resources, Existing Conditions, Water Quality notes that approximately 60 percent of the samples were categorized as PAG. Using the estimated tonnage of waste rock presented in Section 2.3.5 (169,600,000 tons), the BLM has added text to EIS Section 4.2.3 noting that up to 101,760,000 tons of waste rock may be PAG and that even under this worst-case scenario, the remaining 40 percent of the waste rock would be non-PAG material and contain sufficient neutralizing material to encapsulate PAG material.

Implementation of the waste rock handling plan, in conjunction with the Applicant-committed measure to address any seeps and to obtain and comply with the NDEP WPCP (noted in Table 2.3-8), would minimize if not eliminate potential issues associated with PAG.

26ac Please see response to comment 26x.

26ad The presence of dissolved calcium would be an indicator for carbonate activity that neutralizes acidity (MEND 2009). Therefore samples that have higher calcium concentrations would be samples that are acid neutralizing.

6. It is unclear how much PAG waste rock may ultimately be disposed in the north and south waste rock disposal areas. The geochemistry report and EIS should estimate how much PAG waste rock may ultimately be disposed in these facilities, specify the NP/AP ratio the surrounding waste rock would need to meet for the purpose of isolating PAG cells, and clarify whether sufficient neutralizing material would be available when it would be needed for this purpose during mine life. 26ae

7. The EIS should also describe how waste rock facilities would be designed to ensure against leaching of contaminants, such as arsenic, selenium, and thallium, which, according to the POO (p. 2-14), may be released under *non-acidic* conditions based on results of the Meteoric Water Mobility Procedure. 26af

8. In addition to characterization, the EIS should describe how waste rock would be handled, disposed, and reclaimed at the mine. The EIS should describe facility designs and control measures that would be implemented to ensure against degradation of surface water and groundwater quality, and any additional mitigation measures that may be necessary should prevention measures fail. The POO (p. 4-2) states that approximately 20 percent of the waste rock disposal areas' surfaces, prior to final grading and soil placement, will be comprised of PAG material. The EIS should explain how this would affect waste rock disposal, reclamation, closure, and post-closure activities. 26ag

Air Quality

1. The EIS should describe existing air quality in the project vicinity. The EIS should also discuss the National Ambient Air Quality Standards (NAAQS) and Prevention of Significant Deterioration (PSD) increments applicable to air quality in the project area. PSD increments exist for sulfur dioxide, nitrogen dioxide, and PM10 (particulates smaller than 10 microns in diameter). Specifically, for Class II areas, the annual PSD increment for nitrogen dioxide is 25 microns per cubic meter ($\mu g/m^3$); the annual and 24-hour increments for PM10 are 17 $\mu g/m^3$ and 30 $\mu g/m^3$; the annual PM2.5 increment is 4 $\mu g/m^3$; and the annual, 24-hour and 3-hour increments for sulfur dioxide are 20 $\mu g/m^3$, 91 $\mu g/m^3$, and 512 $\mu g/m^3$, respectively. 26ah

2. The EIS should estimate project emissions from all facilities and roads related to the mine's operations, including any off-site processing and support activities, such as vehicle traffic and delivery trucks for fuels, maintenance supplies, and other materials, as well as cumulative emissions from other sources in the project area. The EIS should include the air emissions resulting from the construction and operation of these facilities, including those resulting from road construction and use, as well as any proposed exploratory drilling operations. Modeling should be conducted to determine concentrations of criteria air pollutants for an accurate comparison with the NAAQS. 26ai

3. The EIS should discuss whether a PSD permit would be required for the proposed project. If a PSD permit is required, the mining company will need to determine increment consumption as well. If a PSD permit would not be required, the EIS should indicate whether the baseline date has been triggered for minor sources in the project area. The EIS should discuss impacts to the 26aj

26ae Text in Section 3.2 Water Resources, Existing Conditions, Water Quality notes that approximately 60 percent of the samples were categorized as PAG. Using the estimated tonnage of waste rock presented in Section 2.3.5 (169,600,000 tons), the BLM has added text to EIS Section 4.2.3 noting that up to 101,760,000 tons of waste rock may b PAG and that even under this worst-case scenario, the remaining 40 percent of the waste rock would be non-PAG material and contain sufficient neutralizing material to encapsulate PAG material.

26af The design of waste rock facilities and how they would be protective of potential leaching is summarized in the EIS, as described in the Plan of Operations. The BLM added text to Section 3.2 noting that the results of meteoric water mobility testing analyses indicate that the waste rock has the potential to leach metals under non-acid conditions.

26ag Section 2.3.5 Waste Rock Disposal Areas describes waste rock handling, disposal and reclamation. Section 2.3.16 Reclamation Plan, Waste Rock Disposal Areas further describes how the waste rock disposal facilities would be reclaimed.

26ah Section 3.7 describes existing air quality, and applicability of the PSD regulations. Table 3.7-2 presents National and Nevada ambient air quality standards. Table 4.7-10 and Table 4.7-11 present maximum model-predicted impacts.

In the Draft EIS the air quality impact analysis used NDEP-recommended permitting values of zero for gaseous criteria pollutants CO, NO2, and SO2. To address comments on air quality, the BLM has supplemented the air quality analysis presented in the Draft EIS with a more conservative but materially similar approach in the FEIS, also considering representative background concentrations of gaseous criteria pollutants CO, NO2, and SO2. The BLM has added text, tables and figures to sections 3.7, 4.7 and 5.9. Using the more conservative representative background concentrations greater than zero in combination with modeled results further supports the finding that estimated total concentrations would be below National Ambient Air Quality Standards and Nevada Ambient Air Quality Standards.

Please see also response to comment 25r.

26ai The USEPA-approved AMS/EPA Regulatory Model (AERMOD) (Version 14134) was used with one year of onsite meteorological data processed using AERMET Version 14134 to conduct ambient air quality modeling for the Project. The modeling results demonstrate that the calculated emissions of the four criteria air pollutants from the proposed project, as well as nitrogen dioxide (NO2) emissions estimated from the calculated NOX emissions, when added to background air pollutant concentrations, would not result in exceedances of either the National or Nevada ambient air quality standards. In 2017, the BLM incorporated representative background concentrations of NO2, SO2, and CO as a conservative approach to analyzing potential impacts to air quality. Adding these representative values to modeled concentrations results in estimated concentrations below National and Nevada ambient air quality standards.

A cumulative impact assessment was also conducted, which determined that the combined impact of the Project emissions and air pollutant emissions from other permitted sources within 20 kilometers would not create exceedances o these same standards (EMA 2014). The BLM has incorporated modeling report tables summarizing cumulative impacts into section 5.9. Adding representative values included in the analysis in 2017 to modeled cumulative concentrations resulted in values below National and Nevada ambient air quality standards.

Section 4.7.3 describes emissions. The BLM has expanded the text in the AFEIS to include an estimate of emissions during construction.

26aj Section 3.7 describes applicability of the PSD regulations and the baseline date for minor sources in the region. The EIS describes estimated emissions and anticipated impacts. Table 1.9-1 notes that Midway would obtain an Air Quality Operating Permit from NDEP Bureau of Air Pollution Control (BAPC). Please see also response to 25r.

NAAQS and PSD increments from projected emissions of the project and alternatives, considering the effects from all aspects of mine exploration, excavation, construction, operation, and support activities, such as vehicle traffic, as well as cumulative emissions from other sources in the project area. BLM should closely coordinate with NDEP regarding regulatory requirements and controls.

6aj, *ont.*

4. PSD increments are highly protective of air quality in Class I areas such as wilderness areas and national parks. The PSD increments for PM10 in Class I areas are 4 ug/m^3 and 8 ug/m^3 for the annual and 24-hour standards, respectively; and the nitrogen dioxide annual increment is 2.5 ug/m^3. The EIS should identify all Class I PSD areas located within 100 kilometers of the proposed project site. Class I areas even further away could potentially be affected as well. BLM should consult with the U.S. Forest Service and National Park Service for a determination of which areas could be adversely affected by the proposed action. Potential impacts to Class I PSD areas, including visibility impacts, should be discussed.

6ak

5. The EIS should discuss mitigation measures to minimize air pollutant emissions from the mine. The POO identifies some measures that may be used to control fugitive dust and exhaust emissions. Additional measures exist that could be used to control diesel particulate matter (DPM) and other criteria pollutants, from fugitive sources at the mine. We recommend the following additional emissions reduction measures.

6al

- Use particle traps and other appropriate controls to reduce emissions of DPM and other air pollutants. Traps control approximately 80 percent of DPM, and specialized catalytic converters (oxidation catalysts) control approximately 20 percent of DPM, 40 percent of carbon monoxide emissions, and 50 percent of hydrocarbon emissions;
- Minimize construction-related trips of workers and equipment, including trucks and heavy equipment;
- Lease or buy newer, cleaner equipment (1996 or newer model);
- Employ periodic, unscheduled inspections to ensure that construction equipment is properly maintained at all times and does not unnecessarily idle, is tuned to manufacturer's specifications, and is not modified to increase horsepower except in accordance with established specifications.

6am

6. The EIS should discuss whether and how air quality monitoring would be implemented to ensure project compliance with all applicable air quality standards and permits.

Hazardous Air Pollutants

6an

1. The EIS should estimate releases of hazardous air pollutants (HAPs), including mercury, from the proposed project to air, soil, and water resources, including any off-site facility where ore may be processed.

6ao

2. The EIS should list major processing equipment, including any autoclave or roaster, stripping units, electrowinning units, retorts, refining furnaces, and carbon regeneration kilns. The EIS

26ak Section 3.7 describes existing air quality, applicability of the PSD regulations. The project area is located within a Class II area. The nearest Class I Area is the Jarbidge Wilderness Area located approximately 160 miles to the north of the Plan area. Due to the low release height of the proposed source of emissions, potential impacts (including visibility) on the Class I area are not anticipated.

26al Please see response to comment 25r.

26am Table 2.3-8 presents Midway's Applicant-Committed Environmental Protection Measures for air quality, which include complying with NDEP air permits. Monitoring requirements would be established during the air quality operating permit application and approval process.

26an Table 4.7-7 presents the estimated mercury emissions and Table 4.7-8 presents the estimated HAPs emissions.

26ao Text in Section 4.7.3 Proposed Action, Operation, Maintenance, and Reclamation lists on-site point sources of emissions. The BLM added text to Section 4.7.3 noting that Appendix A of the air quality modeling report (EMA 2014) presents a table of 195 emissions units.

6ao, *cont.* should list in detail all possible sources of HAPs and the unit processes that generate this material.

3. The EIS should discuss how all HAPs would be controlled to reduce their emissions as much as possible, including from any off-site facilities that will process ore from this project. The EIS should describe the equipment included in the system to condense, capture, and/or treat HAPs, including mercury, and reduce their emissions. It should also discuss how these measures are effective in removing HAPs and making it unavailable for release into the environment and indicate how any condensed or captured mercury would be disposed. 6ap

4. The EIS should discuss the likely fate and transport of mercury air emissions from the proposed project and describe the cumulative amount of mercury that is annually emitted to the air from gold mines in northern Nevada. 6aq

5. The EIS should describe the HAPs monitoring that would be conducted, including locations and reporting requirements. 6ar

Climate Change

The EIS should identify the cumulative contributions to greenhouse gas emissions that will result from implementation of the proposed project, and discuss the potential impacts of climate change on the project. The EIS should also identify any specific mitigation measures needed to (1) protect the project from the effects of climate change (e.g., changes to storm magnitude or frequency), (2) reduce the project's adverse air quality effects, and/or (3) promote pollution prevention and environmental stewardship. 6as

Any sustainable design and operation measures that can be identified as reducing greenhouse gases should be identified in the EIS with an estimate of the greenhouse gas emissions reductions that would result if measures were implemented, and the EIS should indicate whether these measures would be required. Attention should be paid to explaining the quality of each greenhouse gas mitigation measure – including its permanence, verifiability and enforceability. We offer the following potential measures for the BLM's consideration:

6at
- Use conveyors rather than haul trucks where possible, e.g., for transporting ore to processing areas and the heap leach facility;
- Incorporate alternative energy components into the project such as on-site distributed generation systems, solar thermal hot water heating, etc.;
- Incorporate recovery and reuse, leak detection, pollution control devices, maintenance of equipment, product substitution and reduction in quantity used or generated;
- Include use of alternative transportation fuels, biodiesel, electric vehicles, ethanol, etc. during construction and operation if applicable;
- Commit to using high efficiency diesel particulate filters on new and existing diesel engines to provide nearly 99.9% reductions of black carbon emissions.

26ap Text in Sections 2.3.7 Processing Ponds and Carbon-In-Columns Processing Plant and 2.3.8 Mill and Carbon-In-Leach Circuit describe the retort system, which would include equipment to capture and condense mercury from the retort chamber for shipment to an off-site secure facility for recycling and gold recovery, along with the treatment of condenser airflow in a carbon adsorption air pollution control device to remove trace mercury vapor before discharging the airflow to the atmosphere.

Text in Section 4.7.3 notes that Midway would develop a detailed Fugitive Dust Control Plan as a mandatory part of Nevada's air quality operating permitting process. The BLM added text noting that implementation of this plan would control or reduce HAPs emissions.

26aq Section 1.10.2 Issues Raised During Public Scoping notes that HAPs could be deposited on soils, vegetation, or water and could result in wildlife, wild horse, livestock, or human exposure.

The BLM added text to section 4.7.3 disclosing that HAPs could be deposited on soils, vegetation, or water and could result in wildlife, wild horse, livestock, or human exposure.

The BLM added text to Section 5.9.6 noting that using mercury emissions information presented in the 2011 National Emissions Inventory (EPA 2015), the BLM compared the estimated potential mercury emissions that EMA calculated with the Nevada state total. The Gold Rock Mine Project could increase the total Nevada mercury gold mining emissions by less than 1 percent (EPA 2015).

26ar Table 2.3-8 presents Midway's Applicant-Committed Environmental Protection Measures for air quality, which include complying with NDEP air permits. Monitoring requirements would be established during the air quality operating permit application and approval process.

26as Section 4.7.3 Proposed Action, Operation, Maintenance, and Reclamation, Greenhouse Gas Emissions describes greenhouse gas emissions. Table 4.7-4 (FEIS Table 4.7-5) summarizes calculated direct emissions of greenhouse gases from on-site sources. Section 5.9.6 notes the proposed project would contribute to the total volume of greenhouse gases in the cumulative effects study area and region.

Section 3.7 Air Quality, Existing Conditions, Climate Change and Section 4.7.3 Proposed Action, Operations and Maintenance, Climate Change describes the impacts of climate change on the project region.

The BLM has re-organized and updated the description of greenhouse gas emissions in sections 3.7 and 4.7 with additional content related to scientific evidence and references associated to climate change. The BLM has added a summary of the U.S. Global Change Research Program (USGCRP) reports for the southwest region, which includes the Plan area. An additional description of the federal GHG reporting program was also added. The BLM has added text to appropriate physical and biological resource sections in Chapter 5 Cumulative Effects.

26at Please see response to comment 25r and 26as.

Vegetation and Wildlife

1. The BLM should work closely with the U.S. Fish and Wildlife Service (USFWS) and the Nevada Division of Wildlife to determine potential impacts of the project on plant and wildlife species, especially species classified rare, threatened, or endangered on either state or federal lists. The EIS should include the following information:

- Identify all petitioned and listed threatened and endangered species and critical habitat, as well as sensitive species, that might occur within the project area;
- 6au Identify all species or critical habitat that could potentially be directly, indirectly, or cumulatively affected by each alternative;
- Discuss how surveys were conducted for each species, the findings of each survey, and all follow-up surveys and monitoring that would be conducted before, during, and/or after mining occurs;
- Include the biological assessment by reference or as an appendix, if one is prepared; and
- If a biological opinion is prepared by the USFWS, it should be summarized or included as an appendix in the Final EIS to demonstrate that the preferred alternative is consistent with the biological opinion.

2. The EIS should discuss the mitigation measures that would be taken to minimize impacts to special status species, and prevent exposure of migratory waterfowl and other wildlife to any
6av toxic solutions or spills. The EIS should discuss the effectiveness of mitigation measures to protect wildlife, and indicate how they would be implemented and enforced. Describe maintenance requirements and monitoring to ensure their effectiveness.

3. The EIS should identify non-jurisdictional wetland and riparian habitat as well as other unique or important habitat areas that could be affected by each alternative, and describe their functions and values and the acreages likely to be affected. The EIS should discuss avoidance, minimization, and mitigation of losses or modification of habitat and plant and animal species composition, and address opportunities for improving the quality and quantity of these areas in designing facilities. Mitigation should be implemented in advance of the impacts to avoid habitat losses due to the lag time between the occurrence of the impact and successful mitigation. If important habitat would be adversely affected by the proposed project, we recommend that the EIS include a detailed mitigation plan for habitat replacement, identifying:

6aw

- Acreage and habitat type that would be created or restored;
- Resources needed to maintain the mitigation area;
- The revegetation plans including the numbers and age of each species to be planted;
- Maintenance and monitoring plans, including performance standards to determine mitigation success;
- The size and location of mitigation zones;
- The parties that would be ultimately responsible for the plan's success; and
- Contingency plans that would be implemented if the original plan fails.

26au The BLM worked with NDOW and USFWS to determine potential impacts on plant and wildlife species. Table 2.3-8 presents Applicant-Committed EPMs that Midway would implement to minimize or eliminate impacts to plants, wildlife, or other resources. Section 3.8 describes existing conditions for vegetation including threatened, endangered, special status species. No federally-listed plant species are known to occur in the project area, and no plant species protected by the State of Nevada were expected in the geographic region and habitats of the project area; however, all cacti including very common species are protected under Nevada state law. Section 4.8 describes environmental consequences for vegetation. Midway would implement Applicant-Committed EPMs to minimize impacts to special status plant habitat. Section 3.9 describes existing conditions for wildlife including threatened, endangered, and special status species, and Section 4.9 describes environmental consequences for wildlife. Section 4.9.11 (FEIS Section 4.9.12) outlines proposed monitoring and mitigation measures to minimize or eliminate impacts to wildlife including mule deer, Greater Sage-Grouse, pygmy rabbit and ferruginous hawk.

26av Text in Section 2.3.7 notes that Midway would cover process ponds with best available technology to prevent birds from accessing the ponds as required by the NDOW Industrial Artificial Pond Permit. Table 2.3-8 presents Applicant-Committed EPMs that Midway would implement to minimize or eliminate impacts to vegetation, wildlife, and other resources.

Text in Section 4.8 and information in Table 4.8-1 indicates the different land cover/vegetation types and the amount of acres that would be disturbed by the Proposed Action and alternatives. Text in Section 4.9 describes impacts to wildlife. Text in Section 4.9.11 (FEIS Section 4.10.12) describes mitigation measures that could be implemented to minimize or eliminate impacts to wildlife.

26aw Text in Section 4.8 and information in Table 4.8-1 indicate the different land cover/vegetation types and the amount of acres that would be disturbed by the Proposed Action and alternatives.

Mine Reclamation, Closure, and Post-Closure

1. The EIS should describe and discuss the following components of mine reclamation:

- A detailed account of measures that would be taken to decommission mine operations and stabilize and revegetate slopes, waste rock facilities, heap leach pads, tailings, roads and other areas;
- Identification (including estimated acreage) of the areas targeted for reclamation, and description of the intended degree of treatment in each area;
- Estimation of any irrigation requirements;
- Timing of reclamation relative to mining operations and duration of reclamation treatment;
- Standards for determining and means of assuring successful reclamation; and
- Means of assuring that all maintenance required for reclaimed areas would continue after operations cease or while operations are suspended.

6ax

2. Reclamation and closure of the heap leach, tailings, and waste rock disposal areas will involve placing varying thicknesses of growth media over rock material to provide store and release covers for the purpose of reducing infiltration of meteoric water. These cover thicknesses vary by facility, but the justifications for these cover thicknesses are not provided in the POO. The EIS should describe the availability, properties, and sources of growth media, discuss how it would be applied to disturbed areas, and identify any additional measures (e.g., amendments) that may be needed to ensure successful reclamation and revegetation of the project site.

6ay

The EIS should identify the permeability standard that growth media covers for the heap leach, tailings, and waste rock facilities would be designed to achieve, and discuss their effectiveness in minimizing exposure of mined material to meteoric water that could mobilize contaminants. If permeability would differ by facility, explain why this should be the case.

6az

- According to the POO (p. 3-7), the heap leach pad would be covered with 2.5 feet of growth media, although data to support this thickness had not yet been collected. In addition, the Heap Leach Draindown Estimator (HLDE) in Appendix K.3 provides heap leach draindown estimates, but the basis for the "covered infiltration rate" of four percent on page 3 is unclear. For example, what cover thickness is needed for a four percent infiltration rate? According to the POO (p. 4-3), the hydraulic properties of the ore and covered infiltration rate for input to the HLDE were adopted from the Pan project, six miles northwest of the Gold Rock project. Please provide the basis for using Pan site hydraulic properties in the Gold Rock HLDE. Why were infiltration rates from the covered and/or uncovered Easy Junior heap leach facility not used to estimate the covered and uncovered infiltration rates for the Gold Rock heap leach facility analysis? The EIS should provide the design basis for, and anticipated effectiveness of, the heap leach facility store-and-release cover thickness, and discuss whether the Easy Junior heap leach facility may provide an appropriate analog.

6ba

26ax Section 2.3.16 summarizes the proposed reclamation plan, including decommissioning, revegetation, post-reclamation monitoring and maintenance.

Table 2.3-1 Summary of Authorized and Proposed Disturbance indicates estimated area (in acres) to be reclaimed, by facility.

Table 2.3-2 Estimated Conceptual Timeline for the Gold Rock Mine Project indicates the project schedule, including timing of reclamation activities.

No changes related to this comment have been made to the EIS.

26ay EIS Section 2.3.16 Reclamation Plan, Plant Growth Media Management notes that plant growth media that are practicably salvageable would be removed prior to facility construction. Various subsections in EIS Section 2.3 Proposed Action note that growth media would consist of the top 1 to 2 feet of material salvaged from the surface. Table 2.3-5 Soil Salvage Volumes presents estimated volumes of material to be salvaged at various mine components.

The BLM has added text to Sections 1.2 Project History and 4.2.3 Water Resources, Proposed Action regarding soil cover modeling performed for the Pan Mine.

The BLM has added text to EIS Section 2.3.16 Reclamation Plan and EIS Section 3.5 Soils, Reclamation Suitability, clarifying that the Gold Rock Cover Infiltration Evaluation (Interralogic 2013b) is included in the Plan as appendix D. The BLM has expanded the description of the cover soil modeling, noting that the Gold Rock soil cover modeling was used as a guide in developing the cover thickness for the WRDAs and the TSF. Text was added summarizing soil cover modeling results for the Easy Junior Mine, and clarifying that soil cover would consist of native fill, alluvium and/or colluvium, and that growth media would be placed on top of this soil cover layer to promote revegetation. The BLM has added text and a table, Table 2.3-6 Depths of Cover and Growth Media To Be Placed At Closure, to clarify depths of cover material (colluvium) and growth media to be placed on each facility.

26az Please see response to comment 26ay.

26ba Regarding the soil cover, please see response to comment 26ay.

Regarding suitability of Pan Mine hydraulic properties for use in the Gold Rock HLDE, the types and distribution of soil and ores at the Gold Rock Mine Project is similar to those found at the Pan Mine. The BLM expanded text in section 3.2 to include existing Pan Mine Project data, and justifications as to why the analysis is an analog to the Gold Rock Project. The BLM also added text noting that the two sites are presented for comparison because the rock types are similar and therefore would have similar characteristics; the sites, however, do differ in quantities and distribution so a direct comparison has not been performed.

- According to page 3-6 of the POO, the waste rock disposal areas would be covered with six inches of growth media. Elsewhere, the POO (p. 2-15) indicates the growth media cover would be 12 inches to minimize the long-term potential for metals leaching. The EIS should discuss how cover thickness needed to minimize infiltration of meteoric water through the waste rock was calculated, and describe its anticipated effectiveness.

6bb

- According to the Gold Rock POO (p. 3-6), closure of the tailings storage facility includes:

  "…installation of an "access" platform constructed out of waste rock to provide the ability to rapidly complete remaining cover construction, which will consist of installation of a soil store-and-release cover over the TSF to limit infiltration. The access platform construction will result in rock penetration to estimated 1 to 2 feet into the tailings forming a "mixed" layer consisting of impermeable rock with tailings filled interstices. Given that the tailings interstices form about 30 percent of the volume of the rock mass, the effective area for seepage through the mixed layer is reduced (compared to a tailings-only layer), thus reducing the permeability of the total area by an amount proportional to the total rock surface area. The above action is expected to result in a 1 x 10^{-7} cm/s hydraulic conductivity layer, or one order of magnitude lower than the expected tailings permeability of 1 x 10^{-6} cm/s. Waste rock and stockpiled growth media will be placed for total minimum thickness of 3 feet on the TSF beach surfaces to conform to beach angles at the time of placement."

6bc

  EPA does not agree that mixing waste rock with tailings would result in a layer with a hydraulic conductivity that is an order of magnitude lower than that of the tailings. In addition, we are concerned about the successful revegetation of the reclaimed tailings, which could be affected by the tailings chemistry. A capillary break (e.g., a layer of gravel) below the growth media may be needed to preclude wicking of salts and metals from the tailings into the vegetated cover above. We recommend the EIS specify the threshold concentrations for total dissolved solids and other contaminants of concern that could adversely affect tailings revegetation efforts, and discuss whether these thresholds could potentially be exceeded. The EIS should assess the need for a cover that includes a capillary break layer and growth media layer, and estimate the necessary thicknesses of these layers to accomplish both successful revegetation and minimization of infiltration of meteoric water into the tailings.

3. We recommend that revegetation be accomplished with only native species indigenous to the area in order to restore the ecosystem to as natural a state as possible after mine closure. We also recommend that revegetation success be monitored and enforced for at least five years following revegetation efforts.

6bd

4. The EIS should describe all closure and post-closure activities associated with the heap leach pad, waste rock piles, tailings, and other facilities. The discussion should describe commitments by the mine company and agencies regarding implementation, performance, and effectiveness

6be

26bb Please see response to comment 26ay.

26bc The BLM has added text to clarify that at closure, during installation of the TSF cover, 1 to 2 feet of waste rock would be placed on the surface, and additional waste rock would be placed as needed to address potential consolidation and differential settling of the tailings in order to maintain a gradient to the north so that stormwater runoff drains to the north. A minimum of 1 foot of growth media would be placed over the waste rock layer. The BLM has noted that if necessary to manage water from the above-liner drainage system, Midway would construct a soil berm on the TSF surface near the northern edge of the facility to form a small area where the solution from the above-liner drainage would be pumped and evaporated. The BLM noted that to monitor solution levels in the TSF, Midway would install, maintain and monitor piezometers in the vicinity of the tailings during operations, closure and post-closure. Water management would continue until the volume of solution collected in the above-liner draindown system reached a de minimis level.

The BLM has added text from the Plan inadvertently omitted from the DEIS, as shown in bold font in the following excerpt: "Entrained solution inventory would be removed from the TSF by evaporation **within lined facilities**."

The BLM added text to Section 2.3.16 clarifying that during each of the four phases of TSF construction, Midway would install one pump in a sump as part of the above-liner underdrain pump-back system for that phase. During operations each sump pump would move solution to the supernatant pond.

The BLM added text to clarify that during the 10 year active management post-closure period, the above-liner drainage sump pumps would pump water to the bermed area on the TSF surface. The pumps would be installed in such a way that the pump could be replaced if necessary. The pumps would be powered by solar-cell-replenished battery configurations and regulated by level control switches. The BLM clarified that a drainage channel would be excavated through the existing saddle north of the TSF to allow free drainage of stormwater from the final cover surface into the stormwater system and into to the southernmost sediment basin.

26bd Section 2.3.16 states, "The primary revegetation effort would emphasize re-establishment of the native species included in the soil seed bank and revegetation seed mixtures." Table 2.3-7 Reclamation Seed Mixture presents the proposed seed mixture, subject to modification by the BLM. Section 2.3.16 Post-Reclamation Monitoring and Maintenance notes that revegetation success would be monitored for a minimum of three years and that 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* (NDEP 1998b). The BLM added reference to the BLM Nevada's Northeastern Great Basin Rangeland Health Standards and Guidelines (BLM 2007).

26be Section 2.3.9 Tailings Storage Facility notes procedures that would be followed if reportable spillage of tailings or water occurs outside the lined TSF. Section 2.3.16 describes reclamation and closure activities. Table 2.3-8 in Section 2.3.17 indicates Applicant-Committed EPMs.

For additional information on closure activities, please see response to comment 26ay.

monitoring, as well as operation and maintenance of caps/covers, draindown systems, evapotranspiration (ET) cells for long-term heap leach draindown, fencing and wildlife protection measures, diversion channels, wells, etc. Describe the mitigation actions that would be taken should destabilization or contamination be detected.

- The EIS should describe the design and operation of the ET cell and potential tailings seepage pond, and describe in detail how draindown fluids from the proposed leach pad and tailings would be captured, treated and/or controlled over the closure and post-closure period. The EIS should discuss the fate and transport of cyanide and the other constituents in the heap and tailings over the course of closure and post-closure, identify the projected draindown rates for these facilities, and address any ecological risks posed by the ET cell, tailings, and tailings seepage ponds (e.g., increasing contaminant concentrations, biological uptake).

- The EIS should provide details about the existing Easy Junior heap leach facility, including a description of the spent ore, draindown water quality, draindown rates, transport and fate of draindown through the alluvium in the draindown field, effectiveness of the 12-inch growth media cover over the past nine years, and vadose zone and groundwater monitoring results, and discuss how this information can be used to inform the analysis and design of the proposed Gold Rock heap leach facility.

- We note that the tailings drain water will be pumped back to the plant to be reused in processing during operations, but it is unclear how this water will be managed during and after closure. According to the POO (p. 2-18), a seepage collection pond is not currently included in the design, as the drainage will be collected within the tailings storage facility; however, if the design changes based on additional site-specific information, a double-lined pond will be constructed at the ultimate downstream toe of the facility. The EIS should discuss what conditions could change that could result in a different design. We also recommend that the EIS assess a gravity drain and passive treatment option for closure/post-closure management of the tailings drainage, which could obviate the need for pumping and reduce long-term post-closure costs.

5. EPA recommends that the EIS discuss the reclamation bonding requirements and amounts for the proposed project and alternatives. The viability of the bond can be a critical factor in whether a project is environmentally acceptable; therefore, this information should be disclosed in the Draft EIS. The EIS should also discuss how BLM could modify the bond during the course of operations if temporary, long-term, or perpetual treatment and/or remediation needs are discovered during operations. The EIS should describe bonding requirements and other measures that BLM and State regulators have in place to ensure funds would be immediately available should the mine operator or its insurer be unable to fund the required reclamation or closure activities.

6. In addition to describing long-term monitoring and management of the mine, the EIS should describe the enforcement mechanisms by either BLM or other regulators should the mine operator fail to properly follow the long-term post-closure plan.

26bf Section 2.3.16 describes the design and operation of the ET cell, and management of draindown in the heap and TSF. The BLM has added information from the Conceptual Engineering Design for Heap Leach and Tailings Storage Facilities (SRK 2013) included as Appendix E of the Plan to Section 2.3.9 regarding the description of the TSF pump-back system during operations, and to Section 2.3.16 regarding decommissioning of the TSF.

Text in Section 2.3.8 notes that the thickened tailings would undergo a cyanide destruction process, in compliance with the NDOW Industrial Artificial Pond Permit. The thickened tails would be mixed with a strong oxidizing compound known as Caro's acid to reduce the concentration of cyanide in residual tailings to below 50 parts per million (ppm) of free cyanide. The treated tails would then be pumped to the TSF for impoundment.

Potential impacts to resources are described in Chapter 4. The BLM added text to Section 4.2.3, noting the design measures that would be implemented to minimize or eliminate potential impacts to water resources. The BLM also expanded the description of geochemical testing and adaptive management, adding information from the Plan and its appendices. For additional information, please see responses to comment 26ay and 26bc.

26bg Section 1.2 Project History describes the existing Easy Junior Mine facilities. Section 3.2 Existing Conditions, Water Quality describes Alta Gold's historical monitoring activities, notes water quality of the stabilized Easy Junior heap rinsate, describes waste rock handling activities, and summarizes rinsate land application activities.

The BLM added information on soil cover modeling from the Pan Mine Project (Dwyer 2012), the RAMS report (CDM Federal Programs and CDM Constructors Inc. 2003) and the Gold Rock soil cover modeling (Interralogic 2013b) included in Appendix D of the Plan to EIS sections 1.2 Project History and 4.2.3 Water Resources, Proposed Action.

The BLM clarified text in Section 1.2 Project History regarding the seep observed at the toe of the Easy Junior WRDA in 2004, adding information from the RAMS report ((CDM Federal Programs and CDM Constructors Inc. 2003) and noting that in 2004 following closure of the Easy Junior Mine WRDA, acidic discharge was observed seeping from an area near the toe of the WRDA. This seepage continued for six months then stopped, with no seepage observed in the subsequent 10 years (Netcher 2015).

26bh Please see response to comment 26bc.

26bi The BLM typically requires a long-term bond, similar to NDEP. The BLM has added text to EIS Section 2.3.16 indicating that a reclamation bond adequate to cover surface reclamation of the Project facilities would be required. This bonding would include costs for reclamation (exploration drill hole and well abandonment; decommissioning, demolition and salvage of buildings and foundations; regrading of mine-related facilities including ancillary facilities and roads; cover soil and growth media placement; revegetation; post reclamation maintenance and revegetation success monitoring until revegetation standards are met) and closure (heap and TSF draindown stabilization, management and maintenance, conversion of a process pond to an ET cell and closure, and water quality monitoring and reporting in accordance with the WPCP).

26bj Section 2.3.14 Emergency Planning and Response notes that Midway would develop a Fluid Management and Monitoring Plan as part of the WPCP. Text in this section also notes that in accordance with NAC 519A.320(2), Midway would notify NDEP and the 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.

Section 2.3.16 Reclamation Plan Post-Reclamation Monitoring and Maintenance notes key stability indicators, possible maintenance activities, and revegetation success monitoring and reporting. The BLM has expanded text in Section 2.3.16 to note that if issues of non-compliance are identified related to an approved Plan of Operation or approved WPCP, the NDEP BMRR would implement enforcement mechanisms as stipulated in Nevada Revised Statutes (NRS) 445A.300-NRS 445A.730, inclusive and the Nevada Administrative Code (NAC) 445A.350-NAC 445A.447, inclusive.

7. The Draft EIS should indicate the projected costs for all post-closure activities, and discuss any requirements BLM would impose on the mine operator to establish a trust fund or other funding mechanism to ensure post-closure care, in accordance with 43 CFR 3809.552(c). The Draft EIS should include a general description of the long-term funding mechanism that BLM would require for post-closure activities. The financial assurance must be kept current as conditions change at the mine. The terms of the fund are critical to determining whether
6bk sufficient funds would be available to implement the post-closure plan and reduce the possibility of long-term contamination problems. The discussion in the Draft EIS should include the following information:

- Requirements for timing of payments into the trust fund;
- How to ensure the trust fund would be bankruptcy remote;
- Acceptable financial instruments (such as those specified in 43 CFR 3809.555);
- Tax status of the trust fund;
- Identity of the trust fund beneficiaries; and
- Identity of the operator with responsibility/liability for financial assurance at this site.

If the potential impacts of the project would necessitate a long-term trust fund, EPA believes this information is essential in the Draft EIS because it could make the difference between a project
6bl sufficiently managed over the long-term by the site operator, or an unfunded/under-funded contaminated site that becomes a liability for the Federal government. In the absence of an appropriate guarantee, EPA could consider a project unacceptable if it could result in unmitigated impacts exceeding environmental standards on a long-term basis.

Environmental Justice

Executive Order 12898 on Environmental Justice addresses disproportionate adverse impacts of federal actions on minority and low-income populations. The EIS should identify minority and low-income populations, and address whether the alternatives would cause any disproportionate adverse impact, such as displacement, changes in existing resources or access, or community disruption. The document should also explore potential mitigation measures for any adverse
6bm environmental justice effects. The EIS should describe the measures taken by the BLM to: (1) fully analyze the environmental effects of the proposed Federal action on minority communities and low-income populations; and (2) present opportunities for affected communities to provide input into the NEPA process. The EIS should state whether the analysis meets requirements of BLM's environmental justice strategy.

Government-to-Government Consultation

We recommend that the EIS discuss BLM's consultation with all Native American tribal governments that could be potentially affected by the proposed project or may have resources
6bn (e.g., traditional cultural properties, groundwater resources) that could be affected. The principals for interactions with tribal governments are outlined in an April 29, 1994, presidential

26bk Please see response to comment 26bi.

26bl Please see response to comment 26bi.

26bm Section 3.19 describes existing conditions related to environmental justice, and Section 4.19 describes the impact analysis related to environmental justice.

26bn Section 6.1 Cooperating Agencies and Consultation summarizes Tribal consultation throughout the EIS process. In 2015, Tribal informational meetings on the DEIS were held on March 6, 10, and 11, for the Confederated Tribes of the Goshute Reservation, the Ely Shoshone Reservation, and the Duckwater Shoshone Reservation, respectively.

memorandum and Executive Order 13175, dated November 6, 2000. It is important that formal government-to-government consultation take place early in the scoping phase of the project to ensure that all issues are adequately addressed in the Draft EIS.

Land Use

If the project area is currently grazed, the EIS should describe the potential impacts to livestock grazing in the project vicinity and discuss whether reduction in forage would necessitate a reduction in livestock grazing in the area for the duration of the project and/or after mine closure and reclamation. Identify any other special uses that would be displaced by the proposed project and discuss the proposed project's specific potential impacts to these uses.

Pollution Prevention

Pursuant to the Pollution Prevention Act of 1990,

> "pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner."

There are significant opportunities for industry to reduce or prevent pollution and energy use at the mine through cost-effective changes in production, operation, and raw materials use, as well as implementation of renewable energy technologies. Such changes offer mining companies substantial savings in reduced raw material, pollution control, and liability costs, as well as help protect the environment and reduce risks to worker health and safety. In addition to the recommendations in the Climate Change section, above, we recommend that BLM and the mining company actively pursue other pollution prevention techniques to prevent or reduce pollution at the proposed mine.

Cumulative Impacts

According to the Council on Environmental Quality (CEQ) regulations implementing NEPA, a cumulative impact is "...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." [40 CFR 1508.7].

Cumulative impacts analyses are important to the EIS as they describe the threats to resources as a whole. Understanding cumulative impacts can illuminate opportunities for minimizing those threats. The EIS should describe the potential cumulative impacts associated with the proposed

26bo Section 3.10 describes existing conditions for livestock grazing. The BLM has expanded text in Section 3.10, providing an estimated total of 3,503 AUMs permitted in the Bull Corner/Poison Patch grazing use area based on estimated values presented in Table 3.10-1. Section 4.10 describes the impact analysis regarding livestock grazing.

26bp As summarized in Chapter 2, Midway has developed a draft waste rock management plan, SCERP, groundwater monitoring plan, hydrocarbon-contaminated soil management plan, all of which would be finalized as the Plan is finalized. Midway would also submit other plans as part of the various local, state, and federal permitting processes, such as a spill pollution control, prevention and counter-measures plan and a storm water pollution prevention plan.

26bq Chapter 5 describes the cumulative effects analysis.

26br Chapter 5 describes the cumulative effects analysis.

project and alternatives, as well as the methodology used to assess them. Guidance on how to analyze cumulative impacts has been published by the CEQ [1] and EPA.[2] In addition, you may also wish to refer to http://www.dot.ca.gov/ser/cumulative_guidance/purpose.htm. This cumulative impact guidance was prepared by the California Department of Transportation, the Federal Highway Administration, and EPA Region 9 for transportation projects in California. However, the principles and the 8-step process in this guidance can be applied to other types of projects, and outside of California. We recommend the principles and steps in this guidance to other agencies as a systematic way to analyze cumulative impacts for their projects.

6br,
nt.

We have the following recommendations for structuring cumulative impacts analyses:

- The description of the affected environment should focus on each affected resource or ecosystem. Determination of the affected environment should not be based on a predetermined geographic area, but rather on perception of meaningful impacts and natural boundaries.
- Focus on resources of concern, i.e., those resources that are "at risk" and/or are significantly affected by the proposed project, before mitigation. Identify which resources are analyzed, which ones are not, and why;

6bs

- Identify all other on-going, planned, and reasonably foreseeable projects in the study area, not just mining projects, which may contribute to cumulative impacts. Where studies exist on the environmental impacts of these other projects, use these studies as a source for quantifying cumulative impacts;
- Include appropriate baselines for the resources of concern with an explanation as to why those baselines were selected; and
- When cumulative impacts occur, mitigation should be proposed. Clearly state who will be responsible for mitigation measures and how mitigation implementation will be ensured.

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[1]Considering Cumulative Effects Under the National Environmental Policy Act, Council on Environmental Quality, January 1997. http://ceq.eh.doe.gov/nepa/ccenepa/ccenepa.htm

[2]Consideration of Cumulative Impacts in EPA Review of NEPA Documents, U.S.EPA, May 1999. http://www.epa.gov/compliance/resources/policies/nepa/index.html

26bs Chapter 5 describes the cumulative effects analysis. Table 5.1-1 describes each resource and the cumulative effects study area locations.

Section 5.1.2 describes past, present, and reasonably foreseeable future actions, disturbances, and projects. Table 5.2-1 lists each past, present, and reasonably foreseeable future action and calculates the area of disturbance for each resource.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Egan Field Office
HC33 Box 33500 (702 N. Industrial Way)
Ely, Nevada 89301-9408
http://www.blm.gov/nv/st/en/fo/ely_field_office.html

In Reply Refer To:
3809 (NVL0100)
NVN-91957

CERTIFIED MAIL -7012 1640 0002 0404 5459 - RETURN RECEIPT REQUESTED

Carter W. Jessop
U.S. EPA, Region 9
Environmental Review Section (ENF-4-2)
75 Hawthorne Street
San Francisco, CA 94105

Dear Mr. Jessup:

Thank you for participating in the telephone conference calls on April 22 and May 4, 2015 relative to Midway Gold US Inc.'s Gold Rock Mine Draft Environmental Impact Statement (DEIS), Bureau of Land Management (BLM) case file NVN-091957. As noted during those calls, BLM developed a technical memorandum summarizing the EPA's questions and is providing responses to those questions in the enclosure.

The DEIS was based on extensive data available in several technical reports. These reports were summarized and incorporated by reference in the DEIS. BLM's intent was to provide succinct statements regarding geochemistry and water because such details can make the document unmanageable for public review. Incorporation by reference is common practice and encouraged in order to keep the document size manageable. However, in response to your suggestion, we will insert information from the technical reports previously incorporated by reference. The information carried over from the technical reports will provide more details and explanation and will be within the scope of the analysis already provided. There are no new impacts of significance not previously identified in the published version of the DEIS, and this information was available to the public with the published DEIS.

Major issues identified for this project during scoping were wildlife (sage grouse and mule deer) and access routes to the mine. Therefore, we provided more details and analysis on these subjects even as we tried to keep the size of the document manageable enough to facilitate meaningful public review by incorporating by reference other technical information.

Geochemistry and water were also raised as issues during public scoping and, accordingly, were addressed in the DEIS. The DEIS summarized methodologies of research and modeling, and the results of that research to analyze impacts and alternatives. In addition, we have site-specific historical data: the Gold Rock Mine Project would expand the closed Easy Junior Mine. No

acid rock drainage or other issues have been identified at the Easy Junior Mine. If the BLM approves the Gold Rock plan of operations, the proponent would be required to obtain a water pollution control permit from the Nevada Division of Environmental Protection Bureau of Mining Regulation and Reclamation, along with other water-related permits. In addition, the proponent has placed in the plan of operations applicant committed measures that would reduce and/or negate any impacts to geochemistry and water. Therefore, the DEIS analysis was based on these measures being in place and impacts were reduced or were negligible.

Based on our review of your comments, CEQ guidance and BLM guidance we intend to proceed with the Final Environmental Impact Statement once we have received your comment letter. We do consider your comments to be substantive and will respond to them accordingly (with changes in the text, short responses to each comment, and a citation to the section where the change was made). Based on our discussions, your comments do not appear to require any substantive changes to the proposed action or development of new alternatives that are outside the spectrum of alternatives already analyzed. Nor do they identify any significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its effects. We will invite you to participate in reviewing the Administrative Final Environmental Impact Statement and the appendix containing all public comments and BLM's responses. Your scoping comments and any other comments you submit on the DEIS will be included.

If you have any questions, please contact Dan Netcher at 775 289-1872, dnetcher@blm.gov or at the above address.

Sincerely,

Jill A. Moore
Field Manager
Egan Field Office

Enclosures:
1. Technical Memorandum

SUMMARY OF ISSUES DISCUSSED
April 22 and May 4, 2015

REGARDING

The Draft Environmental Impact Statement for the Gold Rock Mine Project

On April 22, 2015, representatives of the Bureau of Land Management Egan Field Office (BLM), ARCADIS, Midway Gold U.S. (Midway) and its baseline hydrogeology and geochemistry consultant Hatch held a conference call with the Environmental Protection Agency (EPA) to discuss the Draft Environmental Impact Statement for the Gold Rock Mine Project. This document provides the BLM's summary of the discussion as requested by EPA lead reviewer Carter Jessop. The comments are listed below in **BOLD** by category, followed by the BLM's response to each comment in italics.

A. Geochemistry and Water Resources:

A-1. I have concerns with the geochemistry as presented in the EIS and the geochemistry report (2013). Static results show 60 percent PAG. Kinetic testing was run on 8 samples for 36 weeks, and the summary of the results was that most of the waste rock is expected to be non-acid generating. This expected result informed the PAG strategy. If being informed by lower percentages, 60 percent isn't useful in determining how material is actually going to be handled. The volume of acid-generating rock is not identified, and the EIS text leaves the handling of material vague, pointing to field testing protocols as a main methodology on how handling will be determined/established. Specific handling information is absent from the EIS. We are used to seeing this handling information in other EISs. We need to be sure that PAG is addressed, and that we don't end up with seeps, which would present a danger to wildlife. Is there more known or understood than what is presented in the EIS?

Regarding the adaptive approach to which Brent referred, text in the EIS states that management of waste rock, PAG –'might' be used. No adaptive management plan (AMP) is appended, or seems to have been developed. It sounds like Midway and the BLM intend to implement an AMP. With the amount of geochemistry material provided and the level of uncertainty at least as described in the EIS, the EPA is not convinced that an AMP is the appropriate approach. Sounds like more information is needed to clarify PAG and neutralizing material available. As presented in the EIS, this information is not clear, and Midway is not ready for an AMP. Point the reader to the PoO for specifics. Typical PAG management strategy is encapsulation of PAG in distinct PAG cells. I talked with Tom Olsen, and Tom seemed confused as well that this information wasn't in the EIS, and noted that the information "must be available."

The Draft Baseline Geochemistry and Waste Rock Handling Report, Gold Rock Project, Nevada (Interralogic 2013a) was prepared in 2012-2013 during the early stages of mine planning for Gold Rock. The Gold Rock Mine Project site has a similar geologic and climatic regime to the nearby Pan Mine, and Midway found similar geochemical testing results at both Pan and Gold Rock. The geochemical information available for the Gold Rock Mine Project at the time allowed for reasonable estimation of the deposit's characteristics. Based on the geochemical testing, Midway recognized that the waste rock may include some PAG, and in Section 4 Waste Rock Management Strategy, pages 29 and 30 of the report Midway proposed storage of PAG in a designated "cell"

within the existing footprint of the waste rock disposal areas (WRDAs) and encapsulation and/or cover over the PAG sites. Midway committed to develop a suitable cover design using available site materials to minimize infiltration and limit ingress of oxygen such that waste rock would be isolated from the surrounding environment, noting that the significant depth to groundwater provides additional protection of potential water resources. Knowing that additional information would be gathered over time, in Section 1 Introduction, page 6 and again in Section 5 Summary, page 31 of the report, Midway committed to an adaptive management approach to operational management of materials and to design closure strategies. Midway included the baseline geochemistry and waste rock handling report in the Plan of Operations (PoO) as appendix C.

Section 2.4.3 of the PoO refined the waste rock handling approach, stating that both WRDAs would be covered with a 12-inch vegetated soil cover to minimize the long-term potential for metals leaching. The PoO noted that HCT data indicate that most of the waste rock is not anticipated to be PAG. However, prior to development of the waste rock disposal areas, the results from the HCTs would be reviewed, and if necessary additional waste rock would be tested further to verify its character. If this material is determined to be PAG, and if the material is in manageable pods in the pit, then the material will be isolated in either of the WRDAs. The PoO also states that the final lift over the isolated PAG material in either of the WRDAs would consist of approximately 10 feet of high-carbonate material using waste rock set aside during mining, with an overlying vegetated plant growth media cover (12 inches thick) to minimize the long-term potential for acid generation and metals leaching.

Similar text is presented in PoO Section 4.2.3. PoO appendix K includes figures K.2 and K.3, which show the sections of the WRDAs proposed for PAG waste rock storage.

EIS Section 2.1 (page 2-1) notes that the summary of the Proposed Action presented in EIS Section 2.3 is based on the PoO and its appendices, including the baseline geochemistry and waste rock handling report. EIS Section 2.3.5 Waste Rock Disposal Areas (page 2-18) notes the estimated volume of waste rock for each of the waste rock disposal areas (WRDAs), notes that geochemical testing was performed, and cites the Draft Baseline Geochemistry and Waste Rock Handling Report, Gold Rock Project, Nevada (Interralogic 2013a), noting that the report is appended to the Plan of Operations (PoO) and is summarized in EIS Section 3.2.

EIS Section 2.3.5 (page 2-23) describes the proposed storage of PAG in designated areas where the final lift would consist of approximately 10 feet of high-carbonate material and an overlying 12-inch thick growth media cover, and figure 2.3-1 shows proposed locations of PAG waste rock storage areas. Text in this section states Midway's commitment to use an adaptive management approach to further refine the understanding of the potential for waste rock to actually generate acid and metals leaching through ongoing testing of the waste rock. EIS Table 2.3-8 lists Midway's Applicant-Committed environmental protection measures, which include development of mitigative actions as necessary if surface seeps are identified on the WRDAs.

The BLM will add text to EIS Sections 2.3.5, 3.2 and/or 4.2.3 noting that the Gold Rock Mine Project site has a similar geologic regime to the nearby Pan Mine; and, as one would expect, Midway found similar geochemical testing results at both Pan and Gold Rock.

EIS Section 3.2 Water Resources, Water Quality (page 3-15) describes geochemical testing activities and a summary of the results. The BLM will expand the description of

geochemical testing in EIS section 3.2 Water Resources (page 3-15 and 3-16), and/or 4.2.3 Water Resources, Proposed Action (page 4-7 and 4-8).

EIS section 4.2.3 Water Resources, Proposed Action, Operation and Maintenance, Groundwater (page 4-8) describes geochemical testing results, notes the neutralizing potential of material at the site, indicates that although significant testing has been done, additional testing would be on-going during operations, and states that during operations the waste rock sampling program would be reviewed by NDEP and the BLM to determine if an adaptive management plan is necessary. The BLM will clarify the geochemical information presented in EIS Section 4.2.3 Water Resources, Proposed Action (page 4-7 and 4-8), noting that Midway would conduct additional on-site testing during mining to determine whether there is a need to place the material in a PAG management area, or whether the material could be comingled with other non-PAG material for which no special handling is necessary. Using the estimated tonnage of waste rock presented in PoO Table 2-4 and EIS Section 2.3.5 (169,600,000 tons), the BLM will add text to EIS Section 4.2.3 noting that up to 101,760,000 tons of waste rock may be PAG and that even under this worst-case scenario, the remaining 40 percent of the waste rock would be non-PAG material and contain sufficient neutralizing material to encapsulate PAG material.

Regarding the water pollution control permit (WPCP), numerous EIS sections noted Midway's requirement and commitment to obtain a WPCP from NDEP: Sections 2.3.6 Heap Leach Facilities (page 2-23), 2.3.7 Processing Ponds and Carbon-In-Columns Processing Plant (page 2-30), 2.39 Tailings Storage Facility (page 2-39) Stormwater Management (page 2-40), 2.3.14 Emergency Planning and Response (page 2-51), 2.3.16 Reclamation Plan, Heap Leach Pad (page 2-61) 2.3.16 Reclamation Plan, Tailings Storage Facility (page 2-62), 4.2.3 Water Resources, Proposed Action, Construction, Surface Water (page 4-3), 4.2.3 Water Resources, Proposed Action, Operation, Maintenance, and Reclamation, Groundwater (page 4-7). The WPCP would include detailed plans for monitoring of the waste rock for acid generation potential and the leaching of heavy metals and other contaminants of concern.

Implementation of the waste rock handling plan, in conjunction with the Applicant-committed measure to address any seeps and to obtain and comply with the NDEP WPCP, would minimize if not eliminate potential issues associated with PAG.

A-2. In the PoO and EIS, I didn't find justification for thickness of the soil cover. Were on-site humidity cell test performed? What is the basis for indicating that the proposed cover thickness has acid-buffering capacity? The Easy Junior Mine is generating acidic seepage.

Regarding the cover on the heap, the EIS indicates 2 to 3 feet, but doesn't indicate what rate of infiltration that would allow. The EIS text isn't clear on what infiltration would be allowed by 6 inches of cover. Text on page 2-61 states one thickness of growth media, pages 2-60 and 2-62 state different thickness. No citation for modeled effectiveness of these thicknesses. Soil is typically growth medium. If that is not the case, the EIS is unclear. The EIS notes that the waste rock facilities would get 6 inches, the heap leach pad would get 2 ½ feet – maybe refer to vadose zone modeling to limit infiltration, and the TSF would get 6 inches. Not clear what percentage of infiltration is anticipated. Is the TSF also going to be capped with non-acid generating waste rock? The EIS text is uncertain and misleading. Maybe it's just a matter of clarification in the text.

From 2001 through 2004 the USACE and BLM reclaimed and closed portions of the Easy Junior Mine as part of the U.S. Army Corps of Engineers (USACE) Restoration of Abandoned Mine Sites (RAMS) program. The RAMS closure activities are summarized in the Final Investigation Report, Easy Junior Mine Site, White Pine County, Nevada (RAMS Report) (CDM Federal Programs and CDM Constructors Inc. 2003). As part of these activities, leach pad soil cover modeling was performed. HELP modeling indicated that a 12 inch layer of material from the adjacent onsite soil stockpile would provide a 98 percent cover system efficiency in limiting percolation from the cover soil cap into the regraded leach pad material (CDM Federal Programs and CDM Constructors Inc. 2003). EIS Section 1.2 (page 1-7) indicates that as part of the U.S. Army Corps of Engineers (USACE) Restoration of Abandoned Mine Sites program, the USACE and BLM reclaimed and closed portions of the Easy Junior Mine, and includes the RAMS Report "(CDM Federal Programs and CDM Constructors Inc. 2003)" as a reference. The BLM will clarify text in EIS Section 1.2 Project History, stating that the RAMS closure activities are summarized in the Final Investigation Report, Easy Junior Mine Site, White Pine County, Nevada (RAMS Report) (CDM Federal Programs and CDM Constructors Inc. 2003) The BLM will add this information on soil cover modeling to EIS sections 1.2 Project History and 4.2.3 Water Resources, Proposed Action.

The RAMS Report Section 2.6.2 Analytical Results from Hot Spots (Pages 2-10 and 2-11) notes that Alta Gold reclaimed approximately 50 percent of the waste dump, and that during a field investigation in 2003, these treated areas displayed good revegetation success, whereas adjacent areas where cover soil had not been applied had minimal volunteer revegetation, probably due to the small amount of fines contained in the waste rock (CMD Federal Programs and CDM Constructors Inc. 2003).

The RAMS Report also describes a field investigation of localized areas on the surface of the reclaimed waste rock dump where red iron oxide staining and unsuccessful revegetation was observed. These areas are referred to as "hot spots." At these "hot spots," sulfidic waste exposed to oxygen can produce acid that darkens the soil surface, and can produce gases that are toxic to vegetation in the immediate vicinity of the "hot spot." During the field investigation, a visual evaluation of the waste rock dump found no evidence of acid rock drainage at the toe of the waste rock dump. Nine soil samples were collected from the waste rock dump slopes and analyzed for pH. Several of the samples were collected to obtain background pH levels. One background sample (EJ WD Typical) was collected from a point on the dump that had been cover soiled and revegetated and had a soil pH of 7.64. Another sample (EJ WD Barren) was taken from a point on the dump that had not been cover soiled and did not have vegetation on it. The soil pH for this sample was 7.39. Another sample (HS 7) also did not display acidic soil conditions. This point was sampled because the area was damp and warm to the touch and there was a strong sulfur smell. However, moss was growing on this site and the soil pH was 7.31.

On average, soil sampling of stained areas yielded low soil pH from 2.0 to 2.5, indicating acidic conditions. In areas of the waste rock dump where no staining was observed, the soil pH from two samples was 7.4 and 7.6, indicating a neutral soil condition. With no evidence of acid rock drainage generation from the waste rock dump, the primary environmental concern was acidic off-gases from the "hot spots" that prevent plant growth. The recommended treatment was to place 8 inches of cover soil on the remaining portions of the waste rock dump that had not yet been reclaimed, and an additional 4 inches of cover soil in "hot spot" areas, for a total of 12 inches of cover in those areas (CDM Federal Programs and CDM Constructors Inc. 2003). The Final Completion Report, Golden Butte and Easy Junior Mine Sites Section 3.5 indicates that

the USACE and BLM reclaimed approximately 21 acres of the waste dump by placing 1 foot of borrow material and seeding with an approved seed mix (MWH 2005).

EIS Section 1.2 Project History (page 1-2) notes that Alta Gold regraded the waste rock dump, and the BLM will expand this text to clarify 1994 reclamation activities and the success of that reclamation. . The BLM will also add text to expand on the closure activities as described above.

When designing the covers for facilities at the Gold Rock Mine Project, Midway took into consideration available information for the nearby Pan Mine, which has a similar geologic and climatic setting. At the Pan Mine, soil cover modeling results indicated that a 2.5- foot thick soil cover would result in 0 percent infiltration (Dwyer 2012). The modeling report was included as appendix F of the Pan Plan of Operations. The soil cover modeling information was used to develop the Midway Gold US Inc. Waste Rock Management Plan, Pan Project, Nevada (Interralogic 2013), which was included in the Pan Mine Plan of Operations as appendix E. In the Pan Mine Plan of Operations Section 2.5.3 Waste Rock Disposal Areas, Midway committed to place a 2.5-foot thick layer of high-carbonate material plus an additional 7.5 feet of non-PAG run-of-mine waste, for a total cap thickness of 10 feet under the growth media layer in the designated PAG area. At Gold Rock, more neutralizing material is available, and Midway has committed to placing 10 feet of high-carbonate material under the growth media layer in designated PAG areas.

Midway also conducted soil cover modeling for the Gold Rock Mine Project. The Gold Rock Cover Infiltration Evaluation (Interralogic 2013b) is included in the PoO as appendix D. PoO Section 2.4.3 Waste Rock Disposal Areas (page 2-15 of PoO) and PoO Section 3.10.2 Regrading for Stability, to Promote Runoff, Reduce Infiltration, Control Erosion (page 3-7 of PoO) refer to the soil cover modeling attached to the PoO as appendix D.

EIS Section 2.1 Introduction (page 2-1) notes that the description of the Proposed Action in Section 2.3 is based on the PoO and its appendices. The BLM will add the title of the cover soil modeling report to the list of appendices.

EIS Section 2.3.16 Reclamation Plan Heap Leach Pad (page 2-61) describes vadose zone modeling, notes that a cover thickness of between 2.5 and 3.0 feet would limit infiltration through the cover to 1 percent of annual precipitation, and cites the Gold Rock Cover Infiltration Evaluation (Interralogic 2013b).

The BLM will add text to EIS Section 2.3.16 Reclamation Plan and EIS Section 3.5 Soils, Reclamation Suitability, clarifying that the Gold Rock Cover Infiltration Evaluation (Interralogic 2013b) is included in the PoO as appendix D.. The soil cover thickness to be placed over the heap is critical, given that the heap would contain PAG material and would not contain high-carbonate material that could neutralize PAG. Therefore, the cover soil modeling was performed to determine the appropriate thickness of the cover on this facility. At the WRDAs development of the facilities would include specific placement of a cap of high-carbonate material, with a minimum thickness of 10 feet, over PAG material. Therefore, a protective soil cover comparable to the heap leach facility soil cover is not necessary. Nonetheless, Midway would place a 1-foot thick layer of growth media over the 10-foot thick high-carbonate waste rock layer to promote vegetation growth and minimize infiltration. At the TSF the cover design is intended to form a layer of lower permeability, not to protect underlying PAG, but to reduce the amount of water becoming entrained in the TSF and therefore reduce the build-up of head on the tailings embankment. Again, Midway would place a 1-foot thick layer of

growth media over the 10-foot thick high-carbonate waste rock layer to promote vegetation growth and minimize infiltration. The BLM will expand the description of the cover soil modeling, noting that this modeling was used as a guide in developing the cover thickness for the WRDAs (page 2-60) and the TSF (page 2-63). For further information on the cover for the TSF, please see ***Comment and Response B-1****, below.*

EIS Section 2.3.16 Reclamation Plan, Plant Growth Media Management notes that plant growth media that are practicably salvageable would be removed prior to facility construction. Various subsections in EIS Section 2.3 Proposed Action note that growth media would consist of the top 1 to 2 feet of material salvaged from the surface. The BLM will add text clarifying that soil cover would consist of native fill, alluvium and/or colluvium, and that growth media would be placed on top of this soil cover layer to promote revegetation. Depths of cover material (colluvium) and growth media to be placed on each facility will be clarified in text or a table.

Facility	Minimum Depth (Feet)			
	High-Carbonate Waste Rock	Cover (Alluvium, Colluvium)	Growth Media	Total, High-Carbonate Waste Rock, Cover and Growth Media
General Disturbance (except in the Gold Rock Pit)	0	0	0.5	0.5
Concrete foundations; culverts; pipelines; and other non-reactive, non-combustive, non-corrosive and non-hazardous demolition waste	0	3 to 4	0.5 to 3	3 to 4
Waste Rock Disposal Areas				
Non-PAG	0	0	1	1
PAG "cell"	10	0	1	11
Ore stockpile	0	3		3
Heap Leach Pad	0	1.5	1	2.5
Process Pond	0	1.5	1	2.5
Tailings Storage Facility				
Surface	1 to 2	0	1	3
Embankment	0	0	0.5	0.5

A-3. Page 4-8 of the EIS states that seepage at the Easy Junior waste rock dump began in 2004, yet the EIS presents no follow up data, no pH, no metals,... This may be an easy fix, perhaps change the language on page 4-8.

In EIS Section 1.2 Project History and/or Section 4.2.3 Water Resources, Proposed Action, Operation, Maintenance, and Reclamation, Groundwater, the BLM will add text clarifying that seepage was observed in 2004 continued for six months and then stopped, with no seepage observed in the subsequent 10 years (Netcher 2015).

A-4. Regarding water infiltration in the bottom of the pit, typically the EPA requires testing. It seems that the distance between the pit bottom and groundwater is being relied upon significantly. Based on depth to water was testing determined to be unnecessary, or has any investigation been done on attenuation capacity?

In the dry climate of northeastern Nevada, evaporation is expected to substantially limit the quantity of water that would percolate to depth beneath the pit. In addition, EIS Section 2.3.4 notes that the depth of the proposed pit would be 5,740 feet amsl, and notes that figure 2.3-4 shows a typical conceptual cross section of the proposed pit.

EIS Section 3.2 describes regional groundwater conditions. No water wells are located within the Plan area. East of Easy Ridge, groundwater elevations in the Railroad Valley, Northern Part range from 5,823 to 6,048 feet amsl. The BLM will add text from the Midway Gold US Inc., Gold Rock Project, Baseline Hydrogeology Report (Hatch 2015) to EIS Section 3.2, noting that groundwater was encountered in an exploration borehole near the proposed pit in 2011 at a depth of 5,272 feet amsl, which is approximately 470 feet below the proposed pit bottom.

The BLM will add the regional hydrogeology figure from the Baseline Hydrogeology Report (Figure 5-1, Hatch 2015), which shows a bore hole in the vicinity of the pit with a groundwater elevation of 5,272 feet amsl to EIS Section 3.2.

The BLM will add text to EIS Section 4.2.3 (page 4-7 and elsewhere as appropriate) noting that the distance of more than 400 vertical feet between the pit bottom and the underlying groundwater table significantly limits the potential for vertical migration of contaminants, thereby limiting impacts to groundwater. The potential transport of contaminants beneath the pit is expected to be limited because most precipitation is evaporated and the infiltration potential is low, and because metals and acidity would attenuate within the unsaturated zone through pH neutralization and metals adsorption.

A-5. In reference to the nearby Pan Mine, where shallow alluvial aquifers were encountered, text in the EIS indicates that at Gold Rock similar shallow aquifers may exist but were not encountered at site. These aquifers were vaguely referenced; please clarify. Also, the discussion on placement of monitoring wells seems to point to monitoring in regional aquifers. Would Midway monitor shallow groundwater or shallow and deep groundwater?

The BLM will add text to EIS Section 3.2 Groundwater to clarify existing hydrologic conditions at Gold Rock, noting that shallow groundwater has not been encountered. The BLM will add text to section 4.2.3 noting that shallow groundwater is not expected to be encountered in the Plan area. The BLM will add a figure showing borehole locations to document that no perched alluvial aquifers have been encountered in the project area to section 3.2.

With regard to groundwater monitoring wells, Midway is committed to submitting and obtaining a WPCP. As part of the WPCP, the NDEP BMRR may not require shallow monitoring wells if water is not encountered, but may possibly require deep monitoring wells. Most likely, the wells would be installed in ephemeral drainages downgradient of the WRDAs, heap, and TSF. Midway would develop the WPCP application after the preferred alternatives, in particular the TSF location, are selected and approved.

In anticipation of submitting the WPCP, Midway included monitoring in the PoO. PoO Section 2.4.11 Ancillary Facilities includes a subsection on Monitoring Wells and refers to appendix C of the PoO (later became appendix B), the Midway Gold US Inc. Groundwater Monitoring Plan, Gold Rock Project, Nevada (Interralogic 2012).

PoO Section 3.10.3 Treatment of Outflows, Residual Chemicals, or Fluids in the Heap outlines a conceptual plan for process fluid stabilization. PoO Section 3.21 Measures To Be Taken During Extended Periods of Non-Operation notes that in the event that continuous full-scale production is interrupted, measures implemented to maintain site safety and stability would include fluid management, where process ponds and other fluid management systems would be inspected and operated to prevent overtopping in accordance with permit requirements.

EIS Section 2.3.5 Waste Rock Disposal Areas notes that groundwater quality would be monitored through monitoring wells as described in section 2.3.12 and in the ground water monitoring plan appended to the PoO. EIS Section 2.3.6 Heap Leach Facilities notes that groundwater monitoring wells would be located and monitored as described in EIS section 2.3.12.

EIS Section 2.3.12 Ancillary Facilities provides a summary of the groundwater monitoring plan, stating that Midway would install two alluvial monitoring wells along the drainages west and south of the mine and downgradient of the proposed WRDA, heap, and TSF facilities, refers to figure 2.3-1, acknowledges that adjustments to this plan may be required depending on groundwater conditions encountered in these wells, and notes that the wells would be sampled quarterly during operations. Figures 2.2-1, 2.3-1 and 2.3-11 show the preliminary alluvial monitoring well locations.

EIS Section 2.3.14 Emergency Planning and Response notes that Midway also would develop a Fluid Management and Monitoring Plan (FMMP) as part of its WPCP application. The FMMP would describe the containment systems and procedures for monitoring and controlling process solutions at the heap leach pad, process ponds, process plant, mill, CIL, and TSF during normal operating conditions, and during unusual natural or operational events. The FMMP would be updated as part of the NDEP permitting process for any new process components associated with the Proposed Action, and periodically to incorporate improvements identified during operation.

A-6. Regarding the use of Theis analysis to calculate drawdown at Big Warm Springs, Little Warm Springs after 13 years, at other mines it is more typical to see actual groundwater modeling performed. Why was it determined that the Theis analysis would be performed? Also we wonder whether 13 years is the most significant year of impact or would there be impacts at the springs later than the 13 year-period currently identified?

Regarding the type of model used to evaluate impacts to groundwater levels, hydrogeologists typically use the Theis equation for small mining projects where the alluvium is permeable, and the makeup rate is quite small,. At the nearby Pan Mine, the aquifer was highly permeable, and a low pumping rate was planned. For another mining project near Tonopah, the hydrogeologist used an analytical approach for the same reason. Numerical models are useful and can provide more sensitivity; however numerical models require more data and can produce results very similar to those obtained from an analytical model on the same project. For the Gold Rock Mine Project, the Theis equation was applied, and a no-flow boundary was applied along the western edge of the project area boundary. The permeability and storage rates are anticipated to be high at the site, and the planned pumping rate is low. With these conditions, use of the Theis equation would be a typical approach.

Regarding whether Year 13 was the "worst case" condition at Big and Little warm springs, Year 13 was the end of full-scale pumping for operations. As part of the analysis, the modelers extended the analysis out to capture maximum drawdown and until they got recession in the cone of depression. Table 7-1 in the Midway Gold US Inc., Gold Rock Project, Baseline Hydrogeology Report (Hatch 2015) indicates that under the probable worst case after 17 years of pumping, would result in a cone of depression with 1 foot of drawdown approximately 15.2 miles from the Easy Junior well. Big and Little warm springs are approximately 12 and 13 miles from the Easy Junior well, respectively; however these hydrothermal springs are likely sourced from a bedrock aquifer rather than the shallow alluvial basin fill aquifer in which the Easy Junior well is screened. No impacts to the Big and Little warm springs are anticipated.

The BLM will expand EIS Sections 3.2 and 4.2.3, adding information on the Theis analysis and the anticipated extent of drawdown as presented in the Midway Gold US Inc., Gold Rock Project, Baseline Hydrogeology Report (Hatch 2015). The BLM provided this baseline report to the EPA via WeTransfer on March 30, 2015.

A-7. The EIS refers to perennial flow in Bull Creek but does not note the source- is it a spring? The EIS doesn't note whether Bull Creek would be affected. Is more information available to show whether it would be impacted?

In EIS Section 3:2 Water Resources, Surface Water, the BLM will clarify that Big Bull Spring flows into Bull Creek. Based on comments received from the Eureka County Department of Natural Resources, the BLM will incorporate water resources monitoring or mitigation measures related to the spring and associated water features, such as quarterly monitoring of flow at Big Bull Springs and Bull Creek.

A-8. Figure 3.2-1 shows "inactive" springs. What is "inactive" versus "active". Also this figure is blurry. Higher resolution would be helpful.

Thank you for your input. The USGS's National Water Information System (NWIS) term "inactive spring" was not clearly defined in the EIS. According to the USGS NWIS (http://maps.waterdata.usgs.gov/mapper/instructions.html, accessed May 12, 2015):

> *"Sites may be active or inactive. A site is considered active if: (1) it has collected time-series (automated) data within the last 183 days (6 months), or (2) it has collected discrete (manually collected) data within 397 days (13 months). If it does not meet these criteria, it is considered inactive. Some exceptions apply. For example, a site may also be shown as active if it is part of an ongoing occasional data-collection program. If a site is flagged by a USGS water science center as discontinued, it will show as inactive regardless of how recent data may be. A USGS science center can also flag a new site as active even if it has not collected any data. This control allows a user to select a broad category of sites to view, and is useful for simplifying a view in areas with a high density of sites. The default selection is Active sites."*

As noted in the definitions, the data for inactive sites are sometimes outdated. The BLM will replace this figure in the Final EIS and summarize information on Big Bull Spring presented in the Midway Gold US Inc., Gold Rock Project, Baseline Hydrogeology Report (Hatch 2015) in the AFEIS.

B: Reclamation and Closure

B-1. The discussion on reclamation and closure of the TSF is unusual based on EPA's experience. The discussion doesn't include use of ET cells. The EIS refers to a 10 year period of active and passive management, using a pump back system from toe of TSF embankment to TSF surface, with no description of a tailings draindown curve, and no discussion on the need to manage draindown. Is there more information available? In general, it seems there ought to be another couple of paragraphs but the text in the EIS cuts off. PoO section 4.2.20 (Reclamation Plan) refers to maintenance of a sump for 30 years – with a pump placed above the liner system. This pumping is not referenced in the EIS. There is no discussion of tailings draindown management. It is unusual that active management is proposed rather than to allow draindown to flow into pond(s) where the fluid could be managed passively. Is there a reason for the active

management? We haven't seen this approach before. Is the BLM familiar with this approach? What you've described isn't what I've seen in the EIS. There is no description of draindown curve, and what would be happening at year 10, year 30. Where will any resident water go? Would it stay in the tailings and build up hydraulic head?

PoO Appendix E Conceptual Engineering Design for Heap Leach Pad and Tailings Storage Facilities Section 3.11 TSF Closure text indicates that the conceptual design for closure would include the following actions:

> *"1. Utilization of the TSF area to dispose of all mine related process waters including the HLP draindown to equilibrium flows, anticipated to take approximately 1 year (reference water balance in Appendix B of the Conceptual Engineering Design for Heap Leach Pad and Tailings Storage Facilities).*
>
> *2. Removal and disposal of all tailings deposition and water reclaim piping and pumps.*
>
> *3. Scarifying the downstream slope and crest of the TSF Embankment to conform to preparation requirements for placement of growth media followed by placement of 6-inches of stockpiled growth media on prepared surfaces.*
>
> *4. Placement of waste rock and stockpiled growth media for total minimum thickness of 3 feet on the TSF beach surfaces to conform to beach angles at the time of placement. Significant additional volume should be allowed for to cater for potential consolidation and differential settlement of the tailings beach profiles with time to ensure that the beach gradient is maintained towards the north and stormwater runoff drains towards the north.*
>
> *5. Linking the northern covered beach area (old supernatant pond area at closure) into the existing stormwater diversion channel system draining to the north-west and then west into the southernmost sediment basin.*
>
> *6. If necessary, demarcate an area of TSF for evaporative disposal of water from the above-liner drain system, pumped from the drain sumps, in order to accelerate consolidation of the tailings. The pumps will work on level control switches and be powered by solar cell replenished battery configurations."*

PoO Sections 3.7 Reclamation of Tailings Impoundment and 3.9 Reclamation of Tailings Embankment describe the decommissioning and closure approach for the TSF presented in the PoO Appendix E Conceptual Engineering Design for Heap Leach Pad and Tailings Storage Facilities. PoO Section 3.12 Constraints on Estimated Time To Complete Reclamation and PoO 4.2 Cost Estimate for the Proposed Reclamation Activities, Subsection 4.2.5 Tailings Impoundment identify aspects of TSF closure and reclamation. PoO 4.2 Cost Estimate for the Proposed Reclamation Activities, Subsection 4.2.10 notes that a berm would be constructed on the tailings surface using tailings cover material and the bermed area would be used to contain and evaporate water pumped from the tailings above-liner drain system.

EIS Section 2.3.9 Tailings Storage Facility (pages 2-34 through 2-40) describes construction of the underdrainage collection and pumping system that would be used to pump collected solution to the supernatant pond and notes that by installing a sump and pump-back system, no pipes would penetrate the TSF liner, and all of the solution would stay within the TSF basin. Water recovered from the supernatant pond and the above-liner drainage system would be pumped back to the mill for reuse in the process system. A list of risk reduction measures on page 2-39 notes deposition to create a positive

gradient to the north where supernatant water would be stored for recycling during operations and where water would drain via an excavated channel to the northeast during closure.

EIS Section 2.3.16 Reclamation Plan, Tailings Storage Facility (pages 2-62 and 2-63) presents, almost verbatim, the approach described in PoO Sections 3.7 Reclamation of Tailings Impoundment and 3.9 Reclamation of Tailings Embankment. The BLM will add text from the PoO inadvertently omitted from the Draft EIS, as shown in bold font in the following excerpt: "Entrained solution inventory would be removed from the TSF by evaporation ***within lined facilities.***"

The BLM will add text to page 2-34 and/or pages 2-62 and 2-63 to clarify that during each of the four phases of TSF construction, Midway would install one pump in a sump as part of the above-liner underdrain pump-back system for that phase. During operations each sump pump would move solution to the supernatant pond.

The BLM will add text to clarify that at closure, during installation of the TSF cover, 1 to 2 feet of waste rock would be placed on the surface, and additional waste rock would be placed as needed to address potential consolidation and differential settling of the tailings in order to maintain a gradient to the north so that stormwater runoff drains to the north. A minimum of 1 foot of growth media would be placed over the waste rock layer. The BLM will note that if necessary to manage water from the above-liner drainage system, Midway would construct a soil berm on the TSF surface near the northern edge of the facility to form a small area where the solution from the above-liner drainage would be pumped and evaporated. The BLM will note that to monitor solution levels in the TSF, Midway would install, maintain and monitor piezometers in the vicinity of the tailings during operations, closure and post-closure. Water management would continue until the volume of solution collected in the above-liner draindown system reached a de minimis level.

The BLM will add text to clarify that during the 10 year active management post-closure period, the above-liner drainage sump pumps would pump water to the bermed area on the TSF surface. The pumps would be installed in such a way that the pump could be replaced if necessary. The pumps would be powered by solar-cell-replenished battery configurations and regulated by level control switches. The BLM will clarify that a drainage channel would be excavated through the existing saddle north of the TSF to allow free drainage of stormwater from the final cover surface into the stormwater system and into to the southernmost sediment basin.

The nearby Robinson Mine is using this closure approach of active and passive evaporation on the TSF surface rather than in a separate ET cell downstream of the TSF embankment.

B-2. On the tailings closure strategy, I don't have a copy of the scoping comments, but I recall we expressed concern. We ask that the scoping comments be included and considered as part of our comments on the EIS. Because we were so specific and our comments didn't appear to be directly addressed, we ask that you address our scoping comments in the EIS.

The BLM will include the EPA's scoping comments as comments on the Draft EIS, and provide responses in the Administrative Final EIS.

B-3. Regarding the Water Pollution Control Permit, what is the status?

Midway will develop a draft WPCP application that includes both a heap leach facility and a TSF. The application requires detailed design information that Midway is unable to provide until the preferred alternative, including TSF location, has been selected and approved. The BLM will include a table of contents for a WPCP application as an appendix to the EIS.

B-4. **The EPA would expect to see the use of an ET pond and passive management. Text in the Plan of Operations and EIS note that a seepage collection pond is not currently included in the design as the drainage will be collected within the TSF; however, if the design changes based on additional site-specific information, a double-lined pond will be constructed at the ultimate downstream toe of the facility. Does the bond include this contingency?**

The BLM will add text to clarify that maintaining solution within the TSF poses less risk of leakage or failure than cutting a hole through the liner and embankment is safer and avoids the need to maintain, close, and monitor another facility. The reclamation bond is based on the Proposed Action. No contingency for an ET pond is included in the bond.

B-5. **Has infiltration modeling of the proposed TSF cover been performed to confirm anticipated permeability?**

No infiltration modeling has been performed at this time. The properties of the tailings cannot be accurately predicted at this time. The intent of placing the waste rock layer on the surface is to establish a relatively lower permeability compared to tailings alone. Establishing a lower permeability layer would promote lateral flow along a horizontal gradient rather than vertical flow into the tailings, thereby minimizing infiltration and potential build-up of head behind the TSF dam.

B-6. **Has Midway or the BLM determined whether a geosynthetic liner or clay liner would be placed at the base of the TSF? The EPA is concerned that engineering has not yet been completed.**

The type of liner would be determined by availability of clay liner material at the site. No engineering can be completed until the preferred alternative is selected. Based on recent NDEP guidance on other similar projects, Midway would likely install a geosynthetic liner.

B-7. **Why hasn't a draindown curve been modeled? The EPA thought it was standard practice, and that IM-NV-2013-046 requires one to be developed.**

Following issuance of the BLM's Instruction Memorandum NV-2013-046, Midway's design consultant evaluated the potential requirements for TSF draindown modeling based on the water balance models provided in Appendix E to the PoO – Conceptual Engineering Design for Heap Leach and Tailings Storage Facilities (refer to PoO Appendix E's Appendix B, Table B.1 HLP Water Balance and B.2 TSF Water Balance). Those findings are summarized below:

1. At the end of operations, there is storage of about 408,000 cubic feet of supernatant water at the northern portion of the Barge Operating Channel (BOC). This defines a closure boundary condition at an elevation of 6,570 for water entrained in the tailings mass.

2. The initial four years of post-closure HLP (Table B.1 in Appendix B of PoO Appendix E) and TSF (Table B.2 in Appendix B of PoO Appendix E) actions include:

a. Curtailment of solution application to fresh ore and commencement of active evaporation of recycled solution on the HLP;

b. Curtailment of leach solution processing and commencement of draindown pumping to TSF. During this timeframe, flows surplus to the storage capacities of the Pregnant and Barren HLP ponds will be directed to the TSF;

c. Complete HLP cover;

d. Complete HLP ET-Cell conversion (using Pregnant or Barren Pond); and

e. Direct HLP draindown to ET-Cell for management of long-term HLP draindown.

3. During this timeframe, extraction from the four planned TSF underdrain sumps will be continuously performed to consolidate the tailings mass, achieve an increase in dry density of the tailings solids and reduce the permeability towards 1x10-6 cm/s (or about 1 foot per year), which is realistically achievable for typical gold plant tailings;

4. Immediately following this initial four-year post-closure period, the volume of residual entrained water has been calculated using the following assumed parameters:

a. A boundary condition at the northern end of the impoundment of around 6,570 ft amsl (i.e., similar to that discussed in Item 1 above, equivalent to the tailings surface elevation adjacent to the BOC);

b. A hydrostatic head of 6,560 ft amsl at the "starter wall" phase, Phase 2 and Phase 3 intermediate drain sumps;

c. A volume of tailings equal to 307 million cubic feet below the hydrostatic heads assumed in a) and b); and

d. A tailings average porosity of 30 percent.

5. This results in a conservative estimate of 92 million cubic feet (307 million x 0.3) or about 690 million gallons of residual entrained water in the tailings four years following closure;

6. The net potential evaporation loss from the ultimate impoundment surface area (8.7 million square feet) is 28.75 million cubic feet per year based on annual average evaporation (~ 51 inches) minus average annual precipitation (~12 inches). This means it is possible to evaporate an equivalent of about 409 gallons per minute (i.e., [(28.75 million cubic feet/annum times 7.48 gallons/cu ft) divided by (365 days/year x 24 hours/day x 60 minutes/hour)].

7. In order to evaporate the entrained water inventory over the remaining six years of active closure water management, the pumped flowrate from the four sumps combined would have to average an equivalent of 218 gallons per minute flowrate or about 55 gpm per sump (i.e., 690 million gallons from No. 5 above, divided by (6 years x 365 days/year x 24 hours/day x 60 minutes/hour x 4 sumps). This is less than the potential annual evaporation flowrate of 409 gpm from No. 6 above, and is also feasible from a sump-pump design sizing perspective.

8. It is therefore feasible to manage all entrained water in the TSF solids within 10 years following mine closure (i.e., initial four years of heap leach and TSF draindown management followed by six years of solely TSF draindown management).

9. In addition, the PoO also currently allows for an additional 20 years of management of potential residual entrained water via sump pump operations, and evaporation (from an ET-Cell constructed on the north boundary of the TSF). The combined actions of No.8 and No.9 show a strong potential for removal of all process fluids from the Gold Rock TSF within a maximum 30-year term of draindown management, and achievement

of de minimus flow into the overliner drain (i.e., elimination of flow resulting in above-liner hydrostatic head).

The BLM will incorporate these details in EIS Section 2.3.16 to clarify the tailings closure approach. Addition of these details to the EIS does not alter the results of the impact analysis.

B-8. Has the BLM considered requiring a long-term trust?

Text in EIS Section 2.3.16, Reclamation, Post-Reclamation Monitoring and Maintenance notes maintenance activities that would occur as necessary to satisfy performance guidelines until a final bond release is attained.

The BLM typically requires a long-term bond, similar to NDEP. The BLM will add text to EIS Section 2.3.16 indicating that a reclamation bond adequate to cover surface reclamation of the Project facilities would be required. This bonding would include costs for reclamation (exploration drill hole and well abandonment; decommissioning, demolition and salvage of buildings and foundations; regrading of mine-related facilities including ancillary facilities and roads; cover soil and growth media placement; revegetation; post reclamation maintenance and revegetation success monitoring until revegetation standards are met) and closure (heap and TSF draindown stabilization, management and maintenance, conversion of a process pond to an ET cell and closure, and water quality monitoring and reporting in accordance with the WPCP).

C. Air Quality

C-1. Regarding air quality, The EPA can provide potential measures for reducing particulate matter, not excluding NOx, or offer potential mitigation measures.

Thank you for your offer. The USEPA-approved AMS/EPA Regulatory Model (AERMOD) (Version 14134) was used with one year of onsite meteorological data processed using AERMET Version 14134 to conduct ambient air quality modeling for the Project. The modeling results demonstrate that the calculated emissions from the Project of the four criteria air pollutants, as well as nitrogen dioxide (NO2) emissions estimated from the calculated NOX emissions, when added to the applicable background air pollutant concentrations, would not result in exceedances of either the National or Nevada ambient air quality standards. A cumulative impact assessment was also conducted, which determined that the combined impact of the Project emissions and air pollutant emissions from other permitted sources within 20 kilometers would not create exceedances of these same standards (EMA 2014)..

No comments specifically addressing air quality were received on the Draft EIS, and no new significant information has been identified since issuance of the Draft EIS. The BLM will provide responses to the EPA's scoping comments on air quality in the AFEIS.

D. Wildlife Including Special Status Species

D-1. Regarding sage-grouse, the EIS mentioned site specific baseline noise analysis work planned for 2015. Is that going on now? Is any mitigation proposed for noise impacts?

The BLM will revise the text to indicate that proposed noise monitoring would be performed in 2016 rather than 2015.

With regard to mitigation measures, EIS Section 4.9.11 Additional Monitoring and Mitigation (page 4-106 and page 4-107) presents possible mitigation measures for noise impacts to sage-grouse strutting and breeding.

E. NEPA Process

E-1. The EPA was surprised that the BLM didn't select a preferred alternative.

The BLM will include a preferred alternative in the Final EIS.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

JUN 01 2015

Jill A. Moore
Field Manager
Egan Field Office
Bureau of Land Management
702 N. Industrial Way
Ely, Nevada 89301

Subject: Draft Environmental Impact Statement for the Gold Rock Mine Project, White Pine County, Nevada [CEQ 20150031#]

Dear Ms. Moore,

The U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement (DEIS) for the Gold Rock Mine Project. Our review and comments are provided pursuant to the National Environmental Policy Act, the Council on Environmental Quality Regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

The Gold Rock Mine Project, proposed by Midway Gold U.S. Inc., would be located at the site of the previously reclaimed Easy Junior Mine in White Pine County, Nevada, 50 miles east of Ely and 30 miles south of Eureka. As described in the DEIS, the mine would disturb 3,946 acres of BLM lands in the construction and operation of an open mine pit, two waste rock disposal facilities, a heap leach facility, a mill, a tailings impoundment, a 69 kilovolt transmission line and other associated facilities. EPA understands that the anticipated mining production period is 10 years, while closure and post closure activities would extend the total project life to approximately 48 years.

On October 18, 2013, in response to a request from the BLM Egan Field Office for EPA to be a cooperating agency on the Gold Rock Mine Project, EPA expressed its desire to coordinate with BLM under the existing "Memorandum of Understanding Between EPA and Nevada BLM for Mining Environmental Impact Statements" (MOU), which had been reaffirmed in April 2013. We enclosed a copy of the MOU with our response. The goal of the MOU is to encourage early coordination between our agencies and to raise potential concerns as early in the NEPA process as possible.

On November 5, 2013, EPA sent scoping comments on the Gold Rock Mine project to the BLM, including questions and recommendations regarding mine design, geochemistry, and reclamation and closure procedures. Those comments were largely based upon our review of a number of technical and baseline reports, as well as the draft Plan of Operations for the Gold Rock Mine Project, which had been provided to us by the BLM. EPA's scoping comments identified significant missing information and flaws in the analyses performed in those documents, and recommended numerous revisions before the contents of the reports were incorporated into the DEIS. In accordance with the aforementioned MOU, EPA anticipated being provided the opportunity to review revised technical reports and an administrative draft of the DEIS. This did not occur, and the next communication that EPA received

from the BLM regarding the Gold Rock Mine Project was on February 13, 2015, when the DEIS Notice of Availability was published in the Federal Register.

Upon review of the DEIS, EPA found that the document lacked substantial information on baseline geochemistry, waste rock management, reclamation and closure of the waste rock and tailings storage facilities, and hydrogeologic characterization; all of which are critical to a comprehensive understanding of the project's potential impacts upon water resources. In addition, without the aforementioned information on mine design and potential water resource impacts, we were unable to determine whether any long term post-closure monitoring and mitigation measures would likely be required for this project.

On April 22, 2015 and again on May 4, 2015, EPA and BLM met via conference call to discuss EPA's concerns with the project and the lack of critical information in the DEIS. EPA found these calls to be productive and informative. At the conclusion of the calls, BLM committed to provide EPA with a technical memorandum providing responses to EPA's concerns and identifying where in the project record much of the information missing from the DEIS was contained. EPA received that memo on May 15, 2015 (Attachment 4). We greatly appreciate the BLM's rapid and thorough response to our discussions. We find that, while the memo does not fully address all of our concerns, it does clarify several key points and provide reference to a number of plans and technical documents that contain critical information that is absent from the DEIS. BLM's May 2015 Memo also includes specific commitments by BLM to include additional detail from, and citation to, the referenced technical documents in the Final EIS.

EPA supports the practice of "incorporation by reference" in the NEPA process in order to control the length and technical detail contained in an EIS; however, sufficient summary information should be included in the DEIS to enable the reader to understand the design and impacts of the proposed project and its alternatives. Supporting documentation can then be included in an appendix or incorporated by reference, as appropriate (See CEQ's "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations" [Question 25b] for guidance on determining whether inclusion as an appendix or incorporation by reference is warranted). In this case, however, BLM did not include sufficient summary of, or citation or access to, a number of key documents intended for incorporation in the subject EIS. We believe that doing so in the Final EIS is necessary to provide a robust description of the proposed project and its potential environmental effects, and we appreciate BLM's stated commitment to include such information and citations in that document. In addition, we recommend that the BLM consider making referenced materials available in an electronic format or via download from the BLM's website. For all future projects, we strongly recommend that this be done at the DEIS stage of the NEPA process, and that any documents incorporated by reference be sufficiently summarized in the DEIS.

Based on our review of the DEIS, as clarified by BLM's May 2015 technical memorandum (attached) and materials in the project record that are referenced in that memo, EPA has rated has rated the Gold Rock Mine Project and DEIS as "EC-2 – Environmental Concerns, Insufficient Information" (see Enclosure 1: "Summary of Rating Definitions and Follow-Up Action"). Our detailed comments, including specific recommendations and remedies, are enclosed (Enclosure 2). In accordance with the aforementioned MOU and as previously discussed, EPA requests the opportunity to review a preliminary draft of the Final EIS and provide BLM our feedback before the Final EIS is published.

As discussed in our teleconferences, many of EPA's concerns related to this project are directly relevant to concerns and recommendations that were raised in our 2013 scoping letter. Because it remains unclear where certain of those concerns were addressed, we respectfully request that the sections of our October 5, 2013 scoping letter (Enclosure 3) under the headings of "Geochemistry" and "Mine Reclamation, Closure and Post-closure" be considered part of our comments on the DEIS and be addressed in the Final EIS response to comments.

We appreciate the time and resources you have committed in recent months to working with EPA to address our concerns. We also appreciate the extensions of the DEIS comment period that you granted us in order to enable that process to occur. EPA looks forward to continuing to work with you on this project in accordance with our MOU, and we are available to discuss any of our comments. If you have any questions, please call me at (415) 972-3521, or have your staff contact Carter Jessop, our lead NEPA reviewer for this project, at (415) 972-3815. Please send a copy of the Final EIS to this office (mail code ENF-4-2) at the same time it is electronically filed with our Washington, D.C. office.

Sincerely,

Carter Jessop For

Kathleen Martyn Goforth
Environmental Review Section, Manager

Enclosures:
(1) Summary of Rating Definitions
(2) EPA's detailed comments on the Goldrock Mine Project DEIS
(3) EPA's November 5, 2013 Scoping Comment Letter
(4) "Response to EPA Comments, April 22 and May 4, 2015" (with cover letter)

cc: Amy Lueders, BLM, Nevada
Tom Olsen, BLM, Nevada
Bruce Holmgren, Nevada Division of Environmental Protection

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

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