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**Railroad Exploration Project
Gold Standard Ventures Corporation**

ENVIRONMENTAL ASSESSMENT

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LIST OF ACRONYMS & ABBREVIATIONS

AMSL	Above Mean Sea Level
AUM	Animal Unit Month
BLM	Bureau of Land Management
BMP	Best Management Practice
CESA	Cumulative Effects Study Area
CFR	Code of Federal Regulations

EA	Environmental Assessment
EPM	Environmental Protection Measure
ESA	Endangered Species Act
GSV	Gold Standard Ventures Corporation
MBTA	Migratory Bird Treaty Act
MSHA	Mining Safety and Health Administration
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NAC	Nevada Administrative Code
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act of 1966
PGH	Preliminary General Habitat (sage grouse)
PMU	Population Management Unit
PPH	Preliminary Priority Habitat
POO	Plan of Operations
RC	Reverse-Circulation
RFFA	Reasonably Foreseeable Future Actions
RMP	Resource Management Plan
ROW	Right-of-Way
SHPO	State Historic Preservation Office
SWRGAP	Southwest Regional Gap Analysis Project
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

**RAILROAD EXPLORATION PROJECT
ENVIRONMENTAL ASSESSMENT
GOLD STANDARD VENTURES CORPORATION**

1.0 INTRODUCTION

Gold Standard Ventures Corporation (GSV) is proposing to conduct surface exploration operations for precious metal mineral deposits (gold) on public and private lands in the Railroad Mining District located approximately 25 miles southwest of Elko, Nevada (Figure 1). The proposed exploration operation would consist of constructing access roads and drilling sites, drilling core holes with a truck-mounted drill rig, and, upon completion of the exploration operations, plugging and abandoning the drill holes and reclaiming the drill pads and constructed access roads. GSV submitted a Plan of Operations (POO) to the Bureau of Land Management (BLM) Tuscarora Field Office in February 2011 for the proposed exploration operations. The POO was revised and completed on March 7, 2011. This exploration project would provide continued employment for the current GSV employees, as well as for additional contractors used during exploration activities. The Proposed Action would also explore the resource to determine if additional exploration or mining could take place on the property providing future mining jobs. The Railroad Exploration Project is located on public lands administered by the BLM Tuscarora Field Office and on private lands in Township 31 North (T. 31 N.), Range 53 East (R. 53 E.) and T. 30 N., R. 53 E., Elko County, Nevada.

This Environmental Assessment (EA) was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and in compliance with applicable regulations and laws passed subsequently, including the President's Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] parts 1500-1509), United States Department of Interior requirements, and guidelines listed in the BLM National Environmental Policy Act Handbook H-1790-1 (BLM, 2008a).

In accordance with 43 CFR 3809.411 (3) iii, BLM is required to act on a POO submission and to complete an environmental review of the POO under the provisions of NEPA and associated regulations. Based on this NEPA review, BLM Tuscarora Field Office would determine whether and under what terms and conditions the proposed exploration operations on public lands may be approved.

1.1 PURPOSE AND NEED FOR ACTION

The General Mining Law of May 10, 1872 (Mining Law), as amended (30 U.S.C. §§ 22-54 and §§ 611-615) allows citizens of the United States the opportunity to explore for, discover, claim, and produce certain valuable mineral deposits on those federal lands that are open for mining claim location (open to mineral entry). The purpose of the Proposed Action is to provide GSV

the opportunity to exercise its rights under the Mining Law and in compliance with BLM's Surface Management regulations at 43 CFR Subpart 3809 to conduct exploration activities on its unpatented mining claims necessary to determine the existence of a valuable mineral deposit. In accordance with BLM regulations at 43 CFR 3809.11, 3809.401 and 3809.411, GSV submitted a POO to the BLM Tuscarora Field Office in February 2011 for the proposed exploration operations. The POO was revised in March 2011 and resubmitted to the Tuscarora Field Office. The POO was determined to be complete on March 7, 2011.

1.2 LAND USE PLAN CONFORMANCE STATEMENT

The Proposed Action is not specifically addressed in the Elko Resource Management Plan (RMP) (BLM, 1987), but it is in conformance with the Elko RMP Record of Decision Objective for Land Use and Resource Decisions (BLM, 1987, p. 35):

“Maintain public lands open for exploration, development, and production of mineral resources while mitigating conflicts with wildlife, wild horses, recreation, and wilderness resources.”

The multiple-use mission of the BLM as mandated under the Federal Land Policy Management Act of 1976, as amended, includes authorizing and managing activities such as mineral development, energy production, utility development, recreation, and grazing, while conserving natural, historical, cultural, and other resources on public lands. The BLM's objective is to meet public needs for use authorizations such as mining POOs, Rights-of-Ways (ROWs), permits, leases, and other authorizations, while preventing undue and unnecessary degradation and avoiding or minimizing adverse impacts to other resource values. The Proposed Action would be in accordance with these objectives.

The Proposed Action is consistent with the 2008 Elko County Public Lands Policy Plan (Elko County, 2008), which states:

“14. Mineral Resources

The development of Nevada's mineral resources is desirable and necessary to the economy of the nation, the state and particularly to Elko County.”

And sets forth the following policy:

“Policy 14-1: Retain existing mining areas and promote the expansion of mining operations and areas not specifically withdrawn.”

1.3 ISSUES

An internal scoping process was conducted to determine the scope of this EA. The scoping process began with an interdisciplinary team meeting held at the BLM Elko Office on April 4, 2011. At this meeting, the BLM staff defined issues and made an initial determination of what

needed to be analyzed in this EA, data needs, possible alternatives, and public outreach needs. In April 2011, the Tuscarora Field Office started a subsequent internal scoping process which identified the following issues that need to be addressed in the EA from the implementation of the Proposed Action:

- Cultural Resources;
- Migratory Birds;
- Non-Native Invasive and Noxious Species;
- Visual Resources;
- Livestock and Grazing;
- Sensitive Species;
- Wildlife
- Wetlands, Riparian and Aquatic Resources; and
- Water Resources.

These issues and other resources of concern are addressed within their respective sections in this EA.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The Proposed Action is located in the northern Pinon Range approximately 25 miles southwest of Elko, Nevada (Figure 1). The Proposed Action encompasses approximately 3,169 acres, including 2,620 acres of public lands administered by the BLM Tuscarora Field Office, and 549 acres of private land. The project area includes portions of Sections 28, 32, 33, and 34, T. 31 N., R. 53 E. and portions of Sections 3 and 4, T. 30 N., R. 53 E., Mount Diablo Baseline and Meridian Elko County, Nevada (Figure 2). Access to the project area is either from Elko southwest on Bullion Road or from Highway 278 south of Carlin and east on Ferdelford Creek Road (Figure 2). The project is situated in the Railroad Mining District, which has been intermittently explored and mined for over a century (NBMG, 1991). GSV holds all active mineral claims within the proposed POO boundary.

Exploration activities under the POO would consist primarily of:

- Cross country travel only where necessary and feasible to minimize impacts;
- Improvement of existing access roads where necessary;
- Construction of new access roads where necessary (14-foot wide running surfaces);
- Leveling and construction of drill pads (40 feet by 70 feet);
- Excavation of drilling mud sumps adjacent to the leveled drill pads;
- Drilling of core holes to a depth of approximately 1,500 feet;
- Plugging and abandonment of drill holes; and
- Reclamation of surface disturbances upon completion of the exploration program.

Exploration activities would generally be conducted in two phases and both phases would consist of the same types of exploration activities listed above. The first phase of drilling would be generalized drilling to confirm the geologic materials observed at the surface and conceptual geologic models, as well as to confirm the results of past drilling by previous operators. These drill holes would be widely spaced, generally more than 1,000 feet apart. The second phase of the exploration program would focus on drilling near first phase drill holes that produced favorable results. The second phase would first involve stepping out from those favorable first phase drill holes and drilling new holes spaced between 500 and 1,000 feet apart. Subsequently, additional second phase activities would involve infill drilling (i.e. drilling between existing drill holes) to more specifically delineate the potentially valuable mineral deposit. The spacing on the infill drill holes in this phase would be 50 to 500 feet apart.

The nature of a mineral exploration program is that it constantly evolves as each successive new piece of geologic information is obtained by drilling or other exploration techniques. Mineral

exploration begins by developing a model of the geology and the targeted potential mineral deposit based on the existing surface geology and related information, such as from previously drilled holes. In order to verify and refine the initial geologic model and determine the level of certainty of the existence of a mineral deposit, core holes must be drilled to sample the rocks at depth over the targeted area. As each new hole is drilled, the new subsurface geologic information obtained would revise the geologic model. As the geologic model changes, the next hole location would need to be subsequently determined. It is therefore impractical at the outset of a mineral exploration program to specifically identify multiple proposed drilling locations and associated access routes, as the location of the drill sites and access roads would be determined sequentially as exploration progresses.

In order to: 1) provide the maximum flexibility to conduct an effective and efficient exploration program that would evolve as each new piece of data is obtained; and 2) to prevent undue and unnecessary degradation and minimize surface disturbance, by ensuring that only those access routes and drill pads that are actually necessary are constructed, GSV has not identified specific drill pad sites and the associated access routes. Rather, GSV has identified the maximum amount of surface disturbance that would result within the 3,169-acre project area resulting from the exploration activities. The entire project area has also been surveyed for cultural resources, wetland and riparian resources, and sensitive plant and wildlife species in order to identify areas that need to be avoided or where environmental protection measures (EPMs) and conditions of approval would need to be applied. The cultural resource inventory was performed in October 2010 and biological inventories were performed in May, June, and July 2011. GSV would submit specific individual drill pad and access route locations to the BLM Tuscarora Field Office for approval as the exploration program progresses.

2.1.1 Access Roads

Project access would be by overland travel and may require improvements to existing access routes, and construction of new roads. In areas with terrain less than four percent slope, where practicable and safe, and if approved by the BLM Tuscarora Field Office, drilling equipment would be driven overland to the drill pad locations. For areas where topography is steeper than four percent, access roads would be constructed by excavating existing material. Construction of new project roads would be located on slopes that average approximately 37 percent. Most new roads would be constructed with a bulldozer using a cut-and-fill balance method, which maintains a balance between volumes of cut and fill material. Material from a cut slope is later used as fill to create a level surface. This method minimizes the amount of exposed cut slope while producing a level surface essential for movement of the relatively top-heavy, truck-mounted drilling equipment. New access roads would be constructed with an average running width of 14 feet.

Road gradients would generally not exceed eight percent, but in extreme cases, road gradient steeper than eight percent may be necessary. Prior to construction of a road segment steeper than eight percent, but not exceeding 16 percent, GSV would seek a site-specific authorization from the BLM. Until temporary roads are reclaimed, condition of the roads would be inspected quarterly. Roads showing erosion or siltation would be repaired immediately.

No culverts are currently planned to be installed on new exploration roads. However, there may be instances where GSV deems it necessary to install an armored low-water crossing to protect stream zones from erosion and siltation.

Ferdelford Creek Road would provide the primary access to the site, and Bullion Road is not anticipated for use to travel to the project area during wet periods. Approximately 12 to 15 vehicle trips to the project site are expected each day to bring workers and supplies to the project site during drilling activities. GSV anticipates installing an engineered, armored low-water crossing across Ferdelford Creek Road inside the northern POO boundary, below Cherry Springs (Figure 2). An armored low water crossing would be installed to prevent this access road from washing out during high precipitation events.

2.1.2 Drill Sites

Drill sites, would be constructed on slopes averaging approximately 37 percent. Drill pads would be constructed with a bulldozer using cut-and-fill balance methods. Each drill pad would be constructed to have a 40-foot by 70-foot (0.064 acres) level working surface. Taking into consideration the cut and fill slopes associated with a typical drill pad, each pad would disturb approximately 0.139 acres.

Adjacent to each drill pad, one drilling sump would be excavated to contain drilling fluids during the drilling operation. Each drill sump would be approximately 50 feet long, 30 feet wide, and 15 feet deep. Each sump would include a ramp to allow wildlife to safely escape. The sumps would be constructed within the toes of the cut slopes of the drill pads and would not increase the drill pad's footprint of disturbance. Earthen berms would be constructed around the sumps, where necessary, as safety precautions to prevent spill of drilling fluids into the environment. Sumps would not be lined because the typical drilling fluids or products used would consist of water, Abandonite, Alcomer 120L, bentonite, EZ-mud, polyplus, and/or super plug, and leachate is not known to be harmful.

Each hole would be six inches in diameter and approximately 1,500 feet deep, with an average depth-to-water of 500 feet. Cuttings would be either placed back in the exploration hole or remain in the sump, which would eventually be recontoured during reclamation. All drill holes within the project area would be plugged and abandoned immediately after completion, in

accordance with Nevada Administrative Code (NAC) 534.4369 and NAC 534.4371. As with access roads, until drill sites are reclaimed, condition of the drill pads would be inspected every quarter. Corrective measures would be implemented immediately for any drill site or access road showing unstable soils or erosion.

2.1.3 Surface Disturbance

Surface disturbance for both phases would result from the construction of exploration access roads, drill pads, and drilling sumps. No staging areas are proposed.

Activities under Phase 1, generalized drilling, would disturb a maximum of 50 acres for all proposed activities combined. Activities under Phase 2, step out and infill drilling, would create an additional approximate 150 acres of surface disturbance; 75 acres for the step out drilling and associated access roads and 75 acres for the infill drilling and associated access roads, for a total of 200 acres of surface disturbance for the Proposed Action. The acres of surface disturbance would be divided between private and public lands as described in Table 1.

Table 1 Exploration Disturbance Summary

Disturbance	Phase 1 Acres			Phase 2 Acres		
	Private	Public	Total	Private	Public	Total
Exploration Roads and Drill Pads	20	30	50	60	90	150
Total	20	30	50	60	90	150

2.1.4 Equipment

Surface drilling activities would be accomplished using dual-tube, reverse-circulation (RC) air rotary rigs and diamond-bit core rigs. Each type of drill has its advantages and disadvantages depending upon the nature of the rocks being drilled, the depth of the target, and the information sought. In most drilling programs, more than one drill rig and often more than one type of drill is used. For some deep holes, both methods may be used sequentially to complete the exploration boring. It is expected that on a regular basis three drill rigs (a combination of RC and core rigs) would be operating simultaneously within the project area, but up to five drill rigs (a combination of RC and core rigs) may be in use simultaneously.

The RC air rig is the standard exploration drill, used for the drilling range of 100 to 2,000 feet below ground surface, usually to depths of approximately 900 feet below ground surface. At shallow depths, dry air is the working fluid, with water injected optionally for dust suppression. Typical RC drills are truck-mounted with optional auxiliary booster compressors to enable deeper penetration.

Core drilling rigs are used where conditions prevent the use of other rigs and/or where solid samples of rock core are needed for geological, geotechnical, or metallurgical studies. Core rigs may be truck-, track-, or skid-mounted and moved on-site with a bulldozer.

The need for auxiliary equipment would be minimal but could include light plants and generators. Any light plants used would have light directed downwards to avoid impacts to night skies and disruption of wildlife. A four-wheel-drive water truck and support vehicle would be utilized to transport water to the drill sites. Water would be obtained on-site from artesian hole RR10-8 under a permanent use permit. At each drilling site, three to four four-wheel-drive service trucks would be used to transport fuel and crews to the drill sites. A D-8 dozer or tracked excavator would be used to build the drill pads. All service vehicles carry fire extinguishers. Spark arresters are used on all equipment that has the potential to emit sparks. Fire-fighting equipment (e.g., shovel, Pulaski, extinguisher(s), and/or an ample water supply) would be kept at the drill site(s).

2.1.5 Reclamation

Reclamation activities would be designed to achieve post-exploration land uses, which are consistent with the BLM Elko RMP for the region near the project. Post-exploration land uses would include wildlife habitat, domestic grazing, dispersed recreation, and mineral exploration and development. Further details of the reclamation plan can be found in *Gold Standard Ventures Corporation Railroad Exploration Project Plan of Operations/Reclamation Plan and Reclamation Cost Estimate* (JBR, 2011).

Reclamation of disturbed areas resulting from project activities would be completed in accordance with BLM and Nevada Division of Environmental Protection (NDEP) regulations. GSV's long-term goals for reclamation of exploration disturbances are to:

- Ensure public safety;
- Stabilize the site; and
- Establish a productive vegetative community based on the post-exploration land uses selected - wildlife habitat, domestic grazing, dispersed recreation activities, and mineral exploration and development.

With these objectives in mind, reclamation activities are designed to:

- Stabilize the disturbed areas to a safe condition; and
- Protect both disturbed and undisturbed areas from unnecessary and undue degradation.

The primary closure and reclamation activities to be undertaken for this project include:

- Recontouring disturbed areas;
- Drill hole abandonment; and
- Seeding disturbed areas to establish vegetation.

All drill holes would be plugged and abandoned immediately after completion, in accordance with NAC 534.4369 and NAC 534.4371.

When possible, final and interim reclamation would be performed concurrently with exploration activities. Drill sites would be reclaimed when no longer needed. However, exploration roads that would continue to be needed would be maintained for the duration of the Phase 1 and Phase 2 exploration program. This allows the flexibility to use as much of the existing access roads as possible and minimize new surface disturbance.

Reclamation would consist of recontouring and seeding. Grading would consist of redistributing fill slopes back onto the cut portion of roads and drill pads. When recontoured, the disturbed areas would be graded to promote non-erosive runoff and would be vegetated. To the extent feasible, any remaining disturbed areas would be shaped to blend with the surrounding topography and seeded.

Culverts are not planned to be installed on newly constructed exploration roads. However, it is possible that an armored low water crossing or other type of engineered crossing may be needed to protect stream zones from erosion and siltation. GSV proposes to construct an engineered, armored low-water crossing on Ferdelford Creek Road below Cherry Springs, just inside the northern POO boundary (Figure 2). GSV does not anticipate removing this crossing as it has long-term benefits for site access. Rather, regrading would, to the extent practical, reestablish pre-disturbance topography and drainage, and provide slopes that would, in conjunction with revegetation, control erosion. Water bars would not be installed as part of road reclamation, unless required by BLM.

The recontoured surface would be seeded with 15 pounds of bulk seed per acre. The seed mix used for cost estimating purposes is provided in Table 2.

The timing of seeding would depend on the seeding method. Seeding would occur at any time during the year if seeds are incorporated into the soil surface to a depth no deeper than one-half-inch. If the no till-broadcast seeding method is used, seeding would occur in the fall to minimize the predation of seeds by wildlife and allow seeds to take maximum advantage of moisture from snowmelt in the spring.

Table 2 Seed Mix

Species			Seeding Rates		
Common Name	Scientific Name	Variety	Pure Live Seed per Acre	BLM Pure Live Seed Minimum Standards (lbs/ac)	Bulk Rate (lbs/ac)
Antelope bitterbrush	<i>Purshia tridentata</i>	NE Nevada source	3.0	0.86	3.5
Western wheatgrass	<i>Pascopyrum smithii</i>	Rosanna	2.0	0.76	2.6
Mountain big sagebrush	<i>Artemisia tridentata tridentata</i>	NE Nevada source	0.25	0.20	1.25
Basin wildrye	<i>Leymus cinereus</i>	Magnar	2.0	0.76	2.6
Blue flax	<i>Linum lewisii</i>	Appar	2.0	0.78	2.5
Indian ricegrass	<i>Achnatherum hymenoides</i>	Rimrock	2.0	0.76	2.6
Western yarrow	<i>Achillea lanulosa</i>	Idaho source	0.15	0.84	0.18

GSV expects that they would have all final reclamation, including reseeding, completed within two years following exploration activities. A conclusive determination of revegetation success would be made three years after reclamation seeding. If revegetation is deemed unsuccessful, failed areas would be reseeded and reevaluated.

2.1.6 Project Schedule and Workforce

GSV would commence exploration activities as soon as authorization from BLM is issued. Exploration would be conducted year-round, as weather conditions allow. Extreme wet conditions could preclude safe access to the project site and drill sites. Phase 1 and Phase 2 construction and drilling activities can be completed within four years and reclamation recontouring and reseeding can be completed within the following two years.

Drilling would occur seven days a week, 24-hours a day, with the day split into two shifts. The timing of the shift change would vary. At any given time, 10 to 15 workers would typically be on-site. Traffic would consist of 12 to 15 daily vehicle trips to bring workers or supplies to the site. Water to fill the water truck(s) would be obtained on-site and therefore, water truck traffic would be limited to the project area.

2.1.7 Environmental Protection Measures

GSV has committed to the following EPMS to prevent unnecessary or undue environmental degradation during construction, operation, and reclamation activities of the Proposed Action. The measures are derived from the general requirements established in BLM Surface Management Regulations at 43 CFR 3809, as well as other water, air quality, and environmental protection regulations. GSV would train employees, contractors, and other personnel as to the environmental and cultural resources responsibilities required by state and federal law.

Cultural and Historic Resources

- A Memorandum of Agreement (MOA) between GSV, BLM, and the State Historic Preservation Office (SHPO) would be executed that identifies known historic properties and unevaluated sites, and would stipulate that these sites must be avoided and remain undamaged during exploration and reclamation activities, unless the sites undergo treatment (including archaeological excavation). Avoidance means no disturbance within 30 meters, including driving on existing roads. The MOA would require that compliance monitoring of the historic properties and unevaluated sites by a permitted archaeological consultant be performed annually. Should damage be observed, then the damaged historic property would undergo treatment within one year of discovery. GSV would fund annual monitoring and any treatment, if necessary. The MOA would extend for 10 years or for the life of the project. The MOA would be signed prior to the signing of the FONSI for this EA;
- The MOA would include data sharing provisions, in which GSV would ensure the security and confidentiality of site locations and other sensitive information. GSV would obtain GIS shape files of areas to be avoided (i.e., no disturbance within 30 meters, including driving on existing roads);
- If during the construction activities cultural resources were uncovered, the BLM would be notified and work in the area would halt immediately until documentation and evaluation by a BLM-approved archaeologist was conducted and GSV was authorized to return;
- Any unplanned discovery of cultural resources, items of cultural patrimony, sacred objects or funerary items requires that all activity in the vicinity of the find ceases, and the Tuscarora Field Manager would be notified immediately by phone (775-753-0200) with written confirmation to follow. The location of the find would not be publicly disclosed, and any human remains must be secured and preserved in place until a Notice to Proceed is issued by an authorized officer; and
- GSV would train employees and contractors during safety training prior to construction of roads and drill pads in their responsibilities to protect cultural and historic resources and enforce GSV's policy against off-road cross-country travel and the removal of artifacts.

Noxious Weeds, Invasive, and Non-Native Species

- A weed management program is a construction Best Management Practice (BMP) that would be implemented to eradicate and control existing noxious weed infestations established as a direct result of the Proposed Action (Appendix A);
- Concurrent reclamation would be completed when feasible in order to minimize disturbed areas where weed species could establish;
- A certified weed-free BLM-approved seed mix would be used during revegetation of the disturbed areas;

- If straw is used as a BMP to control erosion and siltation, bales would be certified weed-free;
- Vehicle traffic would be restricted to defined roads or overland travel routes to reduce potential mechanical transport of noxious weed seeds;
- Equipment would be washed prior to arrival at the project site and also during construction if noxious weeds were encountered along the route. Washing would be conducted at the commercial car wash facility nearest to the project, or at another location approved as suitable for such purposes by a BLM Authorized Officer. Cleaning efforts shall concentrate on tracks, feet, or tires, and the undercarriage of the vehicle with special emphasis on axles, frames, cross members, motor mounts, undersides of running boards, and front bumper/guard assemblies.
- Only herbicides approved by BLM would be used;
- Herbicide application would conform to all federal and state regulations;
- GSV would treat areas infested with weeds along access roads used specifically for exploration activities during the appropriate time of year (prior to seed production) to prevent spreading of weeds into the project area and adjacent areas; and
- GSV reclamation bond would cover satisfactory completion of reclamation and guarantee effective noxious weed control.

Air Quality

- All applicable state and federal air quality standards would be met through the use of the best available control technology to control emissions;
- Application of water on roads and pads when necessary to suppress dust. Treatment with water is preferred over magnesium chloride;
- Ferdelford Creek Road would be used daily by workers to reach the project site. GSV would monitor road conditions for maintenance and dust issues and implement appropriate BMPs to keep the roads in good condition;
- Access roads, project area roads, and other traffic areas would be maintained on a regular basis to minimize dust and provide for safe travel conditions.

Water Resources, Wetlands, and Riparian Resources

- Access across ephemeral and intermittent drainages would be scheduled during seasons/times when there is no flow in the drainage;
- Disturbance to perennial stream reaches, seeps, springs, wetlands, riparian communities, including aspen woodlands, would be avoided. No new roads and drill pads would be

constructed within 400 feet of a perennial stream reach, seep, spring, wetland, or riparian community;

- BMPs to control erosion and siltation (e.g., installation of filter fencing, weed-free straw bales, or fiber rolls) would be used during construction. Corrective measures would be implemented immediately for any access road or drill site showing problems with soil stability or erosion; and
- Bullion Road would not be used when conditions are wet enough to cause road damage, including sedimentation to the stream. GSV would coordinate with BLM prior to using the Bullion Road access.

Soils and Reclamation

- All disturbed areas (e.g. drill sites and access roads) would be recontoured and seeded to ensure public safety; prevent subsequent erosion and siltation; and establish a productive vegetative community consistent with pre-exploration levels for wildlife habitat, domestic grazing, dispersed recreation, and mineral exploration and development;
- Further details of the reclamation plan can be found in *Gold Standard Ventures Corporation Railroad Exploration Project Plan of Operations/Reclamation Plan and Reclamation Cost Estimate* (JBR, 2011);
- BMPs to control erosion and siltation would be implemented during construction; and
- Until temporary roads and drill sites are reclaimed, condition of the roads and drill pads would be inspected every quarter. Corrective measures would be implemented immediately for any access road or drill site showing unstable soils or erosion.

Wildlife

- Sumps would include ramping to allow wildlife to safely escape;
- To meet the requirements of the Migratory Bird Treaty Act (MBTA) and avoid destruction of birds, nests, eggs, or young, GSV would avoid clearing land of native vegetation during the avian breeding season (March 15 to July 31). If it becomes necessary to clear any area during the breeding season, a survey for active nests would be conducted by a qualified biologist. The survey would be coordinated with the BLM biologist one week before exploration activities commence. Due to the heavy frequency of nesting behavior, if surveys occur between March 15 and May 15, disturbance must commence within 14 days of the completion of the survey. If disturbance does not occur within 14 days of the original survey, a new survey would be required. If initial surveys take place after May 15, disturbance can commence at any time after the survey completion. The survey results would be reported to the Nevada Department of Wildlife (NDOW) and the BLM. In the event of a discovery of a nesting site, the agencies would determine a suitable buffer depending on the species. Vegetation clearing inside the buffer would be delayed until it is confirmed that the young have fledged. Site reporting

may be done at initial encounter by the surveying biologist to the agency biologist via phone call and resolved before the submission of the report;

- Trash and other waste products would be properly managed and GSV would control garbage that could attract wildlife. All trash would be removed daily from the sites and disposed of at an authorized landfill;
- Because potential for noise disturbance and direct roost and hibernacula habitat destruction could occur from drilling activities, GSV would avoid drilling activities within 400 feet of known Townsend's big-eared bat roost locations (see Figure 5). Not all of the potential bat habitat locations have been surveyed as of July 2012. GSV would identify drilling locations and BLM would review to determine if they may affect recently discovered bat habitat;
- Speed limits would be posted, and if necessary, speeds would be reduced, especially when wildlife is active near access roads;
- Access to the project area along Bullion Road, Ferdelford Creek Road, and any other access roads within three mile of leks would be prohibited one hour before sunrise to 10 am, March 15 to June 15, to protect greater sage-grouse during leking;
- GSV would restrict disturbance activities within three miles of leks from March 15 through June 15 from one hour before sunrise to 10 am. The three-mile buffer would restrict any exploration disturbance from occurring within the project boundary during this time frame, except for a 270-acre area to the west of Bunker Hill, above the historic site of old Bullion and east of the old Silver King mine site; and
- Baseline noise studies would be conducted for ambient, current, and predicted future noise levels at the edge of leks located within three miles of the POO boundary.

Grazing Management

- To reduce the impact to grazing and livestock, any potential damage to livestock fences from construction would be repaired immediately. GSV employees and contractors would close all livestock gates when traveling through the project area for public safety and to ensure livestock are confined to the appropriate allotment.

Public Safety, Fire Protection, and Sanitation

- GSV would comply with Mine Safety and Health Administration (MSHA) regulations;
- Portable sanitary facilities, serviced by a local contractor, would be located on-site for use by personnel during exploration activities;
- Noise suppression devices would be used on all compressors and spark arresters would be used on all equipment that has the potential to emit sparks; and

- All service vehicles would carry fire extinguishers. Fire-fighting equipment (e.g. shovel, Pulaski, extinguisher(s), and/or an ample water supply) would be kept at the drill site(s).

2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the BLM would not approve the POO and would not authorize the Proposed Action. No exploration would occur and no additional information on potentially valuable mineral deposits within the project area would be obtained. Implementation of the No Action Alternative would not meet GSV's purpose and need for the project and would not meet national policy objectives to facilitate appropriate mineral resource development. Selection of the No Action Alternative may also impair GSV's mining claim development rights under the Mining Law.

Under the No Action Alternative, no new surface disturbance or other potential environmental impacts associated with the Proposed Action would occur. The area would remain available for other multiple use activities, as approved by the BLM.

2.3 ALTERNATIVES CONSIDERED BUT NOT ANALYZED

No additional project alternatives have been identified for further analysis.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES FOR THE PROPOSED ACTION AND NO ACTION ALTERNATIVE

3.1 PROPOSED ACTION

This section describes the general setting, identifies the critical elements and other affected resources and uses of concern in the vicinity of the Proposed Action, and describes the affected environment and the predicted environmental consequences of the Proposed Action.

The project area is located approximately 25 miles southwest of Elko, Nevada between Dixie Flats to the northeast and Pine Mountain to the west (Figure 1). It is situated at elevations ranging between 6,600 feet and 8,300 feet above mean sea level (AMSL) on public and private lands. The project area lies at the northern end of the Pinon Range. The dominant topographic features found in this region are the Pinon Range, Pine Mountain to the west of the project area, and Dixie Flats northeast of the project area. The highest peaks in the area are Bunker Hill (8,706 feet AMSL) within the southern extremity of the project area and Raven's Nest (8,600 AMSL) approximately one mile south of Bunker Hill. The Proposed Action includes constructing access roads and drill pads, and drilling exploration core holes on public and private lands in order to locate and define a precious metal mineral deposit. Within the project area, GSV is currently operating under a Notice of Intent under which 4.9 acres of disturbance has been approved.

In general, the area is rural with livestock grazing, mineral exploration, and dispersed recreation being the dominant land uses. The Proposed Action lies within the Railroad Mining District, which has been intermittently explored and mined for over a century (NBMG, 1991). The Proposed Action would provide employment opportunity for contractors necessary to carry out the exploration activities as well as contractors providing other support services. The dominant vegetative community within the project area is the Intermountain Basins Montane Sagebrush Steppe. Intermountain Basins Mountain Mahogany Woodland and Shrubland and Great Basin Pinyon Juniper Woodland vegetative cover types also occupy portions of the project area (Figure 3). The climate of the region is classified as mid-latitude steppe and desert characterized by hot summers and cold winters with semi-arid conditions. The annual average precipitation is 9.62 inches in Elko (WRCC, 2011). The mean annual temperature ranges between 10.9 degrees Fahrenheit in January and 91.0 degrees Fahrenheit in July.

To comply with NEPA, the BLM is required to consider specific elements of the environment subject to requirements specified in statute or regulations or by executive order (BLM, 2008a). Table 3 identifies the resources that must be considered in all environmental analyses, as well as other resources deemed appropriate for evaluation by the BLM, and denotes if the Proposed Action or alternatives affects those resources. The determination of whether a resource was

affected was made by qualified specialists listed in Chapter 5, and took into account implementation of EPMS as a part of the Proposed Action.

Table 3 Supplemental Authorities

Element/Resource	Not Present	Present/ Not Affected	Present/ May be Affected	Comments
Human Concerns				
Air Quality		X		The project equipment fleet would be small. Minor localized effects of fugitive dust from vehicle and heavy equipment over dirt roads would be controlled with a Dust Control Plan.
Cultural Resources			X	Refer to Section 3.2.1
Environmental Justice	X			U.S. Environmental Protection Agency's mapping tool, Environmental Justice View confirms there are no environmental justice populations near the project area that could be potentially disproportionately impacted.
Human Health and Safety	X			The proposed project is not an herbicide project and would not present public human health or safety issues.
Native American Concerns			X	Refer to Section 3.2.2
Wildlife/Animal Concerns				
Migratory Birds			X	Refer to Section 3.2.12
Threatened/Endangered Species	X			Biological surveys were conducted May-July 2011. No federally-listed or species proposed for listing, or their habitats, were found. Greater sage-grouse, a candidate for listing is discussed under Section 3.2.11. Although the headwaters of the mainstem of Dixie Creek support Lahontan cutthroat trout, a federally-listed threatened species, tributaries to Dixie Creek within the project area drain into unoccupied reaches well downstream of areas supporting trout.
Other Concerns				
Areas of Critical Environmental Concern	X			There are no areas of critical environmental concern in the project area.
Farm Land-Prime/Unique	X			According to the Natural Resource Conservation Service farmland classification, no soil units within or near the project area are considered prime farmland, farmland of state-wide importance, farmland of local importance, or unique farmland.
Floodplain	X			FEMA has not issued floodplain maps for the project area, so there are no FEMA-designated 100-year floodways. Where Ferdelford Road crosses Cherry Creek, an engineered armored low-water crossing would not decrease the flood flow capacity of the creek.
Forests and Rangelands (HFRA)	X			The proposed project does not meet the criteria to qualify as a Healthy Forest Restoration Act (HFRA) project.
Non-Native Invasive and Noxious Species			X	Refer to Section 3.2.3
Waste, Hazardous/Solid			X	Refer to Section 3.2.4
Water Quality			X	Refer to Section 3.2.7
Wetlands, Riparian Zones, and Aquatic Species			X	Refer to Section 3.2.8

Element/Resource	Not Present	Present/ Not Affected	Present/ May be Affected	Comments
Wild and Scenic Rivers	X			
Wilderness, Lands with Wilderness Characteristics	X			

* See Statute: NV-2009-030, BLM Manual, regulation or order that may require an element be addressed in a NV BLM EA or EIS.

Other elements of the human environment that have been considered for this EA are listed in Table 4. Resources that may be affected by the Proposed Action are further described in this EA.

Table 4 Resources or Uses Other than Supplemental Authorities

Element/Resource	Not Present	Present/ Not Affected	Present/ May be Affected	Comments
Human Concerns				
Access		X		
Engineering	X			
Fire Management		X		Fire Management does not change
Mining/Minerals		X		The proposed project would not interfere with existing mining activities.
Realty-Land Use		X		
Recreation		X		
Social or Economic		X		
Visual Resources			X	Refer to Section 3.2.5
Wildlife/Animal Concerns				
Livestock and Grazing			X	Refer to Section 3.2.6
Special Status Species			X	Refer to Section 3.2.11
Vegetation			X	Refer to Section 3.2.9
Wildlife			X	Refer to Section 3.2.10
Wild Horses	X			The project area is not within a Wild Horse Herd Management Area
Other Concerns				
Climate Change (GHG's, Wildfire, disease, etc.)			X	Refer to Section 3.2.13
Energy (Gas, Oil, Wind)	X			
Soils		X		All disturbed areas would be reclaimed and stabilized by recontouring and reseeded. During construction, BMPs would be implemented to control erosion and siltation.

3.2 ANALYSIS OF RESOURCES AFFECTED BY THE PROPOSED ACTION

As identified in Tables 3 and 4, the resources that are present and have the potential to be affected by the Proposed Action are described and analyzed in the following subsections. The

description of existing conditions and analysis of potential impacts are provided within the same subsections.

Potential impacts are described in terms of duration (short-term or long-term) and intensity. Short-term impacts generally last between one and five years, while long-term impacts last beyond five years. The thresholds of change for the intensity of a potential impact are defined as follows:

No Impact – There is no detectable impact.

Negligible – The impact is at the lowest level of detection.

Minor – The impact is slight, but detectable.

Moderate – The impact is readily apparent.

Major – The impact is a severe or adverse impact or benefit.

This chapter also analyzes the potential cumulative impacts that would result from the Proposed Action when added to other past, present, and reasonably foreseeable future actions (RFFA), regardless of what agency (federal or non-federal) or person undertakes such other actions.

3.2.1 Cultural Resources

3.2.1.1 Affected Environment

Projects requiring federal funds and permits require compliance with the National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470) and its implementing regulations, Protection of Historic Properties (36 CFR 800; Section 106). Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties (i.e., those properties deemed eligible for listing or formally listed on the National Register of Historic Places) and affords the Advisory Council on Historic Preservation, SHPO, and interested Tribal governments an opportunity to comment on the findings of these federal agencies, as appropriate. Regulations in 36 CFR 800 provide a process for satisfying the requirement of Section 106, namely, resource identification (inventory or survey), significance evaluation, assessment of adverse effects on the significant historic properties, and the resolution of adverse effects through consultation to avoid, minimize, or provide mitigation. Adverse effects include, but are not limited to, destruction or alteration of all or part of a property, removal from or alteration of its surrounding environment; introduction of visual, audible, or atmospheric elements that are out of character with the property or that alter its setting; transfer, sale or lease of property out of federal ownership without adequate conditions or restrictions regarding preservation, maintenance, or use; and neglect of a property resulting in its deterioration or destruction (36 CFR 800.5).

A cultural resource or cultural property is "...a definite location of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence." The term includes historic or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specific social and/or cultural groups" (USDI-BLM Manual 8100).

Central Nevada has been inhabited by humans for at least 12,000 years. The Western Shoshone claim this area as aboriginal territory with Northern Paiute territory cross-over documented in the oral histories of both peoples. The Euro-American settlement of this territory began with the establishment of trading posts along the California Trail from 1845-1869. Euro-American settlement of the area as well as an influx of Chinese immigrant workers began in earnest in the 1870s with the completion of the California Pacific Railroad in 1869 and the discovery of gold along the Carlin Trend in the early 1870s.

A Class II and Class III cultural inventory surveys were conducted in the project area from October 2010 to June 2011 (Birnie, 2011a and 2011b; Schroedl, 2011). The inventory surveys covered the entire project area, utilizing Class III survey methodology except in areas of extremely challenging and/or dangerous topography. In these instances a Class II survey methodology was utilized (approximately one-third of the total survey area). Twenty-three sites were documented within the project area, including one pre-contact site and 22 historic sites. Of these sites, the pre-contact site and eight of the historic sites were evaluated as eligible for placement on the National Register of Historic Places (Schroedl, 2011).

3.2.1.2 Environmental Consequences

Eligible sites would be protected from direct adverse effects through site avoidance. Site avoidance would be accomplished through strategic placement of drilling platforms and designation of travel routes during the planning phase. Indirect adverse effects on eligible sites (e.g., introduction of visual, audible, or atmospheric elements that are out of character with the property or setting; heightened awareness of site location/vandalism; and inadvertent/accidental impact) would be negated through actions in place as defined in the language within the MOA as defined in Section 2.1.7, above.

3.2.2 Native American Concerns

3.2.2.1 Affected Environment

Before making decisions or approving actions affecting public lands, the BLM must determine whether Native American interests would be affected, observe pertinent information gathering and consultation requirements, and document how this was done. Native American consultation is the process of identifying and seeking input from appropriate Native American governing

bodies, community groups, and individuals. The consideration of their interests is a necessary and integral part of the BLM's decision making process.

BLM conducts periodic Native American consultations with the Tribes. The project was coordinated with the various tribes during the tribal coordination meeting that occurred during 2011. No comments or concerns were received.

3.2.2.2 Environmental Consequences

The NEPA process does not require a separate analysis of impacts to religion, spirituality, or sacredness. As a result, references in the analysis to such beliefs or practices convey only the terminology used by participants involved in the on-going consultation for this project. This terminology, should it be provided during on-going consultation, does not reflect any BLM evaluation, conclusion, or determination that something is or is not religious, sacred, or spiritual in nature, but would convey only the information that has been gathered through tribal consultation and coordination.

No issues concerning Native American traditional values such as religion, spirituality, or sacredness were brought forward during the consultation efforts. Consultation will remain an on-going process throughout the life of the project.

The effects of federal undertakings on properties of traditional religious and cultural importance to contemporary Native Americans are given consideration under the provisions of Executive Order 13007, the American Indian Religious Freedom Act, and recent amendments to the NHPA. As amended, the NHPA now integrates Native American tribes into the Section 106 compliance process.

No Native American concerns regarding traditional values were brought forward during the BLM consultations that occurred during 2011 or throughout the 45 day response time following the consultation.

3.2.3 Non-Native Invasive and Noxious Species

3.2.3.1 Affected Environment

The BLM National List of Invasive Weed Species of Concern (BLM, 2008c) defines an invasive weed as, "a non-native plant that disrupts or has the potential to disrupt or alter the natural ecosystem function, composition and diversity of the site it occupies. Its presence deteriorates the ecological health of the site, replaces desirable vegetation, and may interfere with management objectives for that site. It is an invasive species that requires a concerted effort (manpower and resources) to eradicate from its current location, if it can be removed at all".

Invasive and non-native plant species may spread from infested areas by people, equipment, livestock, wildlife, and winds. They often exhibit aggressive growth and have the potential to seriously degrade the economic and ecological values of natural resources. Under Executive Order 13112, it is the policy of the land management agencies to prevent introduction of non-native invasive and noxious species and to control their spread (NISC, 2011). Nevada Revised Statute 555.005 defines noxious weeds as plants which are likely to be “detrimental or destructive and difficult to control or eradicate.” The state of Nevada classifies noxious weeds into three categories as defined below.

Category A weeds are not found or are limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; and control is required by the state in all infestations (NDOA, 2005).

Category B weeds are established in scattered populations in some counties of the state; actively excluded where possible; actively eradicated from nursery stock dealer premises; and control is required by the state in areas where populations are not well established or previously unknown to occur (NDOA, 2005).

Category C weeds are currently established and widespread in many counties of the state with abatement at the discretion of the state quarantine officer (NDOA, 2005).

The BLM Elko District Office has developed an Integrated Weed Management Plan for the entire Elko District. In addition, the BLM follows all federal and state noxious and invasive weed laws and Executive Orders as described above as well as BLM Manual 9015 – Integrated Weed Management (BLM, 1992).

The BLM weeds database was reviewed and a survey of non-native invasive and noxious species was conducted by JBR Environmental Consultants, Inc. (JBR) on June 28 and 29, 2011. State-listed noxious weed species hoary cress (*Cardaria draba*), Scotch thistle (*Onopordum acanthium*), and Western water hemlock (*Cicuta douglasii*) were observed and documented in the project area.

Invasive non-native species, cheatgrass (*Bromus tectorum*), and bulbous bluegrass (*Poa bulbosa*) were common along roadsides and in historically disturbed areas and areas previously affected by wildfire.

3.2.3.2 Environmental Consequences

The Proposed Action has the potential to create conditions favorable for non-native invasive and noxious species. Proposed disturbance would directly impact 200 acres of pinyon-juniper

woodland and sagebrush shrubland habitat, thus leaving these areas susceptible to non-native invasive and noxious species. In addition, potential transport of weed seeds to other proposed exploration sites could occur. With the implementation of the EPMs discussed in Section 0 and successful reclamation (as determined through the Nevada Guidelines for Successful Revegetation for the Nevada Division of Environmental Protection, the BLM, and the U.S.D.A. Forest Service, NDEP, 1998), the potential for spread and establishment of non-native invasive and noxious species would be minimized, making impacts from non-native invasive and noxious species long-term and minor.

3.2.4 Wastes, Hazardous/Solid

3.2.4.1 Affected Environment

Drilling fluids or products, including but not limited to Abandonite, Alcomer 120L, bentonite, EZ-mud, polyplus, and super plug, would be utilized as necessary during drilling and would be stored within the project area. These products are not known to be hazardous.

Hazardous materials used for the project would include diesel fuel, gasoline, and lubricating grease. Diesel fuel and gasoline would be brought on-site in mobile fueling tanks. Any hazardous materials such as lubricating grease would be stored on the drill rigs or transported by drill trucks. All containers of hazardous substances would be labeled and handled in accordance with the Nevada Department of Transportation and MSHA.

If any oil, hazardous material, or chemicals are spilled during operations, they would be cleaned up immediately. Spills of a reportable quantity would be reported as required by federal and station regulations. After clean up, the oil, noxious fluids, or chemicals and any contaminated material would be removed from the site and disposed of at an approved off-site disposal facility. Trash and other debris would be collected daily and hauled off-site and disposed of in an authorized landfill. No trash would be buried or burned on-site. Self-contained, portable toilets would be used for human waste. These portable toilets would be serviced by a licensed contractor and materials would be disposed of in an approved facility.

3.2.4.2 Environmental Consequences

Through the implementation of the Spill Contingency Plan, and EPMs described in Section 0, impacts to the environment from wastes hazardous and solid are not expected.

3.2.5 Visual Resources

3.2.5.1 Affected Environment

The project area is located in the Great Basin. The Great Basin is characterized by a pattern of isolated mountain ranges and broad sweeping basins, clear skies, and broad, open vistas. Generally, the area is covered with a homogeneous pattern of sagebrush and grasses. Vegetation

colors include tawny gray, brown, dark green, gray-green, and green. Soil colors range from beige to a chalky off-white, which when exposed, contrast highly with the surrounding vegetation. Rock colors vary from light to dark brown.

Existing man-made features in the project area include linear forms and predominately consist of dirt roads as well as old mine shafts, adits, and declines. Many of the historic mining roads have reclaimed naturally and are overgrown and substantially unnoticeable. The horizontal lines of existing roads in the area create weak to moderate contrasts to the surrounding hills. Moderate color contrasts have resulted from the vegetation removal associated with these activities.

The western portion of the project area is within Visual Resource Management Class III. Class III allows for activities that involve moderate changes of the existing landscape (BLM, 1986). Activities in a Class III management area may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

The eastern portion of the project area is within Visual Resource Class IV. Class IV allows for activities that involve high levels of change to the existing landscape (BLM, 1986). Activities in a Class IV management area may dominate the view and be the major focus of the viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

3.2.5.2 Environmental Consequences

The Proposed Action would result in negligible visual impacts principally affecting the elements of line, texture, and color. These visual impacts would be consistent with the existing conditions at the site. The Proposed Action is similar to historic mining uses of the area. Surface disturbance has the potential to result in short- and long-term visual impacts, principally contrasting with the elements of line and color in the landscape. Implementation of the EPMS in Section 2.1.7 and the reclamation plan would reduce the visual impact. Impacts to visual resources are expected to be consistent with visual resource management Class III and Class IV.

3.2.6 Livestock and Grazing

3.2.6.1 Affected Environment

The project includes portions of three allotments, approximately 2,560 acres within the Dixie Flats Allotment (17,931 total acres), 400 acres within the Pine Mountain Allotment (63,519 total acres), and 300 acres within the El Jiggs Allotment (72,499 total acres). This represents 4.2 percent of the Dixie Flats allotment and less than one percent of Pine Mountain Allotment and El Jiggs Allotments. The Dixie Flats allotment includes permitted animal unit months (AUMs) for cattle and horses from April 1 to October 31, the Pine Mountain Allotment includes permitted

AUMs for cattle from April 1 to November 30, and the El Jiggs Allotment includes permitted AUMs for cattle from March 1 to November 15.

3.2.6.2 Environmental Consequences

Disturbance as a result of the Proposed Action would be approximately 200 acres. Individual drill pads would be reclaimed as soon as the holes are plugged and abandoned. As the project progresses, a continually increasing percentage of the disturbed land would be in various stages of reclamation. Ultimately, all new surface disturbances would be reclaimed and reseeded.

Vehicular traffic during construction, drilling, and reclamation operations would utilize cattle guards installed to replace range gates. The AUMs lost due to disturbance of vegetation are not expected to change the permitted AUMs or impact any water source within any of the allotments; therefore, impacts on livestock and grazing are expected to be negligible and short-term.

3.2.7 Water Quality

3.2.7.1 Affected Environment

The project site is centered generally along the crest of the Pinon Range so the western side of the project area drains to lower Pine Valley in the Pine Hydrographic Basin, and the eastern side drains to Dixie Flat in the Middle Humboldt Basin. Both hydrographic basins are a part of the larger Humboldt River Basin. Within the project boundary, United States Geological Survey (USGS) maps show perennial streams - Webb Creek, Cherry Creek, and two unnamed tributaries of Dixie Creek. Webb Creek flows into Ferdelford Creek, two miles west of the project boundary. Field surveys conducted May through July 2011 found this channel to be an ephemeral channel that flows in response to precipitation and runoff of snowmelt. The portion of Cherry Creek within the project boundary is perennial, fed Upper and Lower Cherry Springs. Cherry Creek eventually flows into Dixie Creek, approximately seven miles northeast of the project boundary.

One of the Dixie Creek tributaries mapped by USGS crosses Section 34, T. 31 N., R. 53 E. near the old Bullion town site; the other crosses Section 33 at the center of the project area. The field survey confirmed these features and found the beginning of the Dixie Creek tributary in Section 33 intercepts a seep which keeps the channel bottom consistently damp for about one mile. It is probable that the source is an upgradient melting snow cornice. Another seep was found at the beginning of a second tributary in Section 33. This channel was not identified as perennial stream on USGS maps. The channel bottom appears to stay consistently damp for approximately 0.5 mile.

3.2.7.2 Environmental Consequences

The Proposed Action would result in approximately 200 acres of surface disturbance, which could increase the potential for sedimentation of surface waters if there is erosion and sediment laden runoff from project disturbances, or if roads are constructed in such a manner as to capture runoff and channel it into streams. Risk is higher due to the steep slopes within the project area. However, impacts to surface water would be minimized or avoided through implementing the EPMs outlined in Section 2.1.7. Construction within 400 feet of a wet stream reach, spring, seep, wetland, or riparian zone would be strictly avoided. Construction immediately adjacent to or across ephemeral drainages would be kept to the minimum necessary.

To further reduce the potential for sedimentation, BMPs would be installed as needed during construction, operation, and reclamation of the project. The BMPs that would be implemented include such measures as filter fences, berms, and fiber rolls. Reclamation of the disturbed areas, as described in Section 2.1.7, would prevent long-term impacts from occurring.

The Proposed Action includes installing an engineered, armored low-water crossing at the Cherry Creek crossing on the existing Ferdelford Creek Road. The improvements would protect the stream while improving access across the creek.

As described in Section 2, a sump would be constructed at each drill pad to capture and contain drilling fluids, thereby preventing the potential discharge or spill of drilling fluids into stream channels. The potential impacts to surface water quality from spilled petroleum products would be minimized by the implementation of the Spill Prevention Plan. In addition, all containers of hazardous substances would be labeled and handled in accordance with the MSHA and NDEP regulations.

By avoiding constructing new roads and drill pads near wet stream reaches, springs, seeps, perennial stream segments, wetland and riparian zones, there would be minor impacts on water resources. There would also be no reduction in and therefore no impact on the flow of springs, seeps, or streams that would affect water rights holders. The Proposed Action would not increase the area or likelihood of flooding.

3.2.8 Wetlands, Riparian Zones, and Aquatic Species

3.2.8.1 Affected Environment

Quaking aspen (*Populus tremuloides*) woodlands cover approximately two percent of the project area (Figure 3). Riparian communities dominated by aspen, willow (*Salix* spp.) and Woods' rose (*Rosa woodsii*) were found at Cherry Springs. Open water zones supported aquatic plants such as common monkey flower (*Mimulus guttatus*) and American speedwell (*Veronica americana*). Wetland plants adapted to inundation included Nebraska Sedge (*Carex nebrascensis*) and arctic

rush (*Juncus arcticus*). Aquatic species such as benthic invertebrates and Lahontan speckled dace (*Rhinichthys osculus robustus*) are known to occur in tributaries of Dixie Creek outside the project area. Of the aspen type, JBR estimates that less than two acres are riparian (Figure 7).

An assessment of Proper Functioning Condition was made at Cherry Springs in July 2011, inside the existing enclosure fence. Upper Cherry Springs was found to be at proper functioning condition, and the smaller lower Cherry Springs was in between proper functioning and functioning at risk, but with an upward trend (survey data available in the project files).

3.2.8.2 Environmental Consequences

Activities which cause increased sediment and water delivery to drainageways could directly and indirectly impact wetland, riparian, and aquatic resources. Increases in runoff can lead to channel downcutting, loss of shallow aquifers, and reductions in health and extent of riparian and wetland plant communities. Increases in sediment loads can have a number of detrimental effects to both aquatic invertebrates and fish including clogging of gills, aggradation and destabilization of stream channels, burial and suffocation of eggs and larvae, behavioral changes, and increases in mortality. Project design features to avoid drainages and riparian areas as well as implementation of EPMs and BMPs are expected to reduce impacts on wetlands, riparian zones and aquatic resources within the project area itself and to areas indirectly affected by the Proposed Action, including streams in the Dixie and Pine Creek watersheds. There would be negligible impacts on wetlands and riparian zones and aquatic species.

3.2.9 Vegetation

3.2.9.1 Affected Environment

The project is located within the Central Great Basin Floristic Division of the Intermountain Region (Cronquist et al., 1997). In general, the lower slopes of the project area are covered by sagebrush shrubland, progressing upslope to mountain brush and pinyon-juniper woodlands typical of high desert mountain vegetation in northern Nevada. Scattered limber pine and mountain mahogany are present at higher elevations with rocky outcrops and cliffs, giving way to sagebrush and grasses on ridge tops. Aspen woodlands occur in higher elevation swales and valleys between mountain slopes. The location of an individual vegetation community depends on several factors including elevation, soil type and depth, slope, aspect, and precipitation. The vegetation communities present in the project area are shown in Table 5 and on Figure 3 and are discussed below.

Table 5 Vegetation Communities in the Survey Area

Plant Community Name	Elevation Range (feet) AMSL	Acres	Percent of Survey Area
Montane sagebrush steppe	6,600 – 8,400	2,490.40	74.22
Cliff and canyon	6,600 – 8,400	351.06	10.46
Pinyon-juniper woodland	6,900 – 7,700	229.64	6.84
Mountain mahogany woodland	7,500 – 8,200	179.95	5.36
Aspen woodland	7,200 – 8,300	58.27	1.74
Xeric mixed sagebrush	6,600 – 8,000	13.55	<1
Other	6,600 – 8,400	32.40	<1
Total		3,355.27	100

Land cover communities in the southwestern United States have been mapped as part of the Southwest Regional Gap Analysis Project (SWRGAP) (USGS, 2004). According to SWRGAP, six land cover communities plus an “other” category occur within the proposed project area. Vegetation surveys conducted in spring and summer of 2011 found the mapped land cover communities were consistent with what was found in the field.

Inter-Mountain Basins Montane Sagebrush Steppe is the dominant vegetation community type, covering 74 percent of the project area. This community ranges from 6,500 feet to 7,600 feet in elevation and can be found on all aspects, occurring on deep to stony soils. Vegetation is dominated by mountain sagebrush (*Artemisia tridentata* var. *vaseyana*) and antelope bitterbrush (*Purshia tridentata*). Other common shrubs include snowberry (*Symphoricarpos* ssp.), serviceberry (*Amelanchier* ssp.), wax currant (*Ribes cereum*), ceanothus (*Ceanothus* ssp.), and chokecherry (*Prunus virginiana*). Common understory species include arrowleaf balsamroot (*Balsamorhiza sagittata*), Idaho fescue (*Festuca idahoensis*), mule-ears (*Wyethia amplexicaulis*), and Sandberg’s bluegrass (*Poa secunda*).

The Cliff and Canyon vegetation community covers 10 percent of the project area, consisting of mostly rocky outcrops with shallow, rocky soils. Overstory species include low sagebrush, rockspirea (*Holodiscus dumosa*), and mountain sagebrush with an understory comprised of stemless goldenweed (*Stenotus acaulis*), sulphur flower buckwheat (*Eriogonum umbellatum*), matted buckwheat (*Eriogonum caespitosum*), and Sandberg’s bluegrass. Cliff and Canyon vegetation community also supports curl-leaf mountain mahogany (*Cercocarpus ledifolius*) stands.

Pinyon-juniper woodland occurs in the mid-to-lower elevations on seven percent of the project area. The vegetation community is dominated by a mix of singleleaf pinyon (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*). The understory is sparse and is comprised mostly of snowberry, arrowleaf balsamroot, and bulbous bluegrass.

Mountain mahogany woodland occurs on five percent of the project on upper hill slopes above 6,800 feet AMSL. Small stands also occur within the Cliff and Canyon vegetation cover type. Curl-leaf mountain mahogany is dominant, but limber pine (*Pinus flexilis*) occurs in this community type at elevations above 8,000 feet. There is a shrub layer of sagebrush, bitterbrush, ceanothus, and snowberry and an herbaceous layer that includes arrowleaf balsamroot, mule-ears, and a variety of bunchgrasses.

Aspen woodland, including riparian, occurs on two percent of the project area in locations where there is adequate soil moisture; most commonly in swales, valley bottoms, and north aspects. The dominant overstory species is quaking aspen and the understory is comprised of shrub species dominated by willow, rose, wax currant, and snowberry.

Xeric mixed sagebrush shrubland is the least abundant vegetation community (less than 1 percent) within the project area. It occurs on ridgelines and gentle slopes between 6,500 and 7,000 feet in elevation. Sites are dry and wind-swept, with shallow rocky volcanic soils. Dominant shrubs include little sagebrush (*Artemisia arbuscula*) and may include other sagebrush species. The understory is dominated by stemless mock goldenweed, squirreltail grass (*Elymus elymoides*), and Sandberg's bluegrass.

3.2.9.2 Environmental Consequences

There would be a direct loss of 200 acres of vegetation removed with implementation of the Proposed Action. The 200 acres of disturbance to vegetation represents a very small percentage of the habitat type locally or regionally available, and the site would be reclaimed with native vegetation upon project completion. There is the potential for non-native invasive and noxious species to become established in disturbed areas. With proper reclamation and implementation of the EPMs as outlined in Sections 2.1.5 and 2.1.7, impacts to vegetation are expected to be minor and short-term.

3.2.10 Wildlife

3.2.10.1 Affected Environment

The project area contains six key habitats for wildlife as defined in the *Nevada Wildlife Action Plan* (WAPT, 2006) including sagebrush, lower montane woodlands, springs, cliffs and canyons, caves and mines, and aspen woodland. Sagebrush provides nesting, cover and structure, protection from predators, thermal cover, and foraging for wildlife. Lower montane woodlands provide nesting cover, structure, and cavities, protection from predators, thermal cover, and foraging for wildlife. Springs provide water availability and food resources to wildlife. Cliffs and canyons provide structure for ledges and crevices for nesting, roosting, or denning, protection from predators, protection from the summer sun, and areas for foraging. Caves and mines provide roosting, denning, and nesting habitat for wildlife. Aspen woodlands provide

nesting, cover, protection, and forage for wildlife as well as create slow-moving water conditions (WAPT, 2006).

Reptiles

The following reptiles were observed in the project area during biological surveys: western fence lizard (*Sceloporus occidentalis*), sagebrush lizard (*Sceloporus graciosus*), and short-horned lizard (*Phrynosoma douglassii*).

Birds

The following bird species were observed in the project area during surveys: American robin (*Turdus migratorius*), hermit thrush (*Catharus guttatus*), black-chinned hummingbird (*Archilochus alexandri*); white-crowned sparrow (*Zonotrichia leucophrys*); spotted towhee (*Pipilo maculatus*); tree swallow (*Tachycineta bicolor*); rock wren (*Salpinctes obsoletus*), Brewer's blackbird (*Euphagus cyanocephalus*); brown-headed cowbird (*Molothrus ater*); Clark's nutcracker (*Nucifraga columbiana*); cliff swallow (*Petrochelidon pyrrhonota*); common raven (*Corvus corax*); lark sparrow (*Chondestes grammacus*); ruby-crowned kinglet (*Regulus calendula*); lazuli bunting (*Passerina amoena*); mountain bluebird (*Sialia currucoides*); and mountain chickadee (*Parus gambeli*). Additional bird species with the potential to occur in the project area are discussed in Sections 3.2.2 and 3.2.7.

Raptors

The following raptors species were observed in or near the project area: golden eagle (*Aquila chrysaetos*), great horned owl (*Bubo virginianus*); red-tailed hawk (*Buteo jamaicensis*); and turkey vulture (*Cathartes aura*). Additional raptor species with the potential to occur in the project area are discussed in Section 3.2.2 and 3.2.7.

Appropriate foraging habitat for all of the aforementioned raptor species occurs within the project area. No raptor nests were observed in the project area during surveys. Appropriate nesting habitat for these species consists of trees, rocky ledges, cliffs, and snags.

Mammals

The following mammal species have been observed within the project area either directly or by observation of tracks, scat, burrow, or other sign: coyote (*Canis latrans*), common gray fox (*Urocyon cinereoargenteus*), cottontail (*Sylvilagus* ssp.), black-tailed jackrabbit (*Lepus californicus*), woodrat (*Neotoma* sp.), cliff chipmunk (*Eutamias dorsalis*), golden-mantled ground squirrel (*Spermophilus lateralis*), and least chipmunk (*Tamias minimus*). Bat species recorded in the project area are discussed in Section 3.2.7.

Game Species

Big game species and/or their sign observed within the project area during surveys includes mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocapra americana*), elk (*Cervus canadensis*), and mountain lion (*Puma concolor*). Small game species observed within the project area during surveys includes chukar (*Alectoris chukar*), greater sage-grouse, and mourning dove (*Zenaida macroura*).

All of the project is within crucial summer range for mule deer. The project is located within NDOW's Management Unit 065 which is managed for mule deer and pronghorn antelope. According to the 2010 - 2011 Big Game Status Report, 157 mule deer were observed through an aerial survey conducted in April in Management Unit 065. Mule deer populations within this unit have been increasing for the past two years. Mule deer winter range occurs approximately three miles to the northwest and four miles to the southwest of the project area within the Cortez Mountains. Mule deer all-year range occurs approximately five miles west of the project area in the Cortez Mountains (NDOW, 2008). An Area 6 Mule Deer Herd Management Plan has been developed to lessen impacts to Area 6 mule deer populations. Many of the proponents BMPs meet the management plan guidelines.

All of the project area is considered summer habitat for pronghorn. Surveys for pronghorn antelope were not conducted by NDOW in 2011 for this unit, but trends show the population within Management Unit 065 to be increasing slightly (NDOW, 2011).

Elk herd population numbers are unknown in this area, but habitat is available in aspen stands throughout portions of the project area. All of the project area is considered low-density elk habitat.

Mountain lion habitat is located throughout the project area. Population numbers are unknown, but 87 lions were harvested in the eastern region in 2011 (NDOW, 2011).

3.2.10.2 Environmental Consequences

The Proposed Action would create 200 acres of disturbance primarily to sagebrush/grassland wildlife habitat within the project area. This habitat is abundant and widespread throughout the region of the project area. Animals displaced as a result of project disturbance would likely relocate to adjacent undisturbed habitat, which would have a negligible effect if the habitat is not at carrying capacity. If displaced animals move into habitat already at carrying capacity, there could be an increased mortality rate among the displaced individuals and an impact to the resident population. This in turn would cause a reduction in viable young at least for the next breeding season in the area. The loss of habitat as a result of the project would be short-term.

Habitat would be restored following successful reclamation efforts, which would return the area to productive wildlife habitat.

Additional impacts to other wildlife would also be expected from increased noise and human activity. Species such as deer, antelope, small mammals, and birds may avoid the available habitat around the project disturbance. However, there is an abundance of similar habitat surrounding the project area. Additional impacts to wildlife as a result of increased traffic along access roads would be minimized by the implementation of the EPMs. With implementation of the EPMs and the reclamation plan, impacts to wildlife are expected to be minor and short-term.

3.2.11 Special Status Species

3.2.11.1 Affected Environment

BLM policy (516 DM 6840; BLM, 2008b) defines Special Status Species to include:

- Federally Threatened or Endangered Species: Any species that the United States Fish and Wildlife Service (USFWS) has listed as an endangered or threatened species under the Endangered Species Act (ESA) throughout all or a significant portion of its range.
- Proposed Threatened or Endangered Species: Any species that the USFWS has proposed for listing as a federally-endangered or threatened species under the ESA.
- Candidate Species: Plant and animal taxa that are under consideration for possible listing as threatened or endangered under the ESA.
- BLM Sensitive Species: Species that are 1) currently under status review by the USFWS; 2) whose numbers are declining so rapidly that federal listing may become necessary; 3) with typically small and widely dispersed populations; or 4) that inhabit ecological refugia or other specialized or unique habitats.
- State of Nevada Listed Species: State-protected animals that have been determined to meet BLM's Manual 6840 policy definition.

Actions that may affect species that are federally listed, or are proposed for listing, as threatened or endangered are subject to consultation or conference under Section 7 of the ESA. Nevada BLM policy is to provide State of Nevada Listed Species and Nevada BLM Sensitive Species with the same level of protection as is provided for candidate species in BLM Manual 6840.06C (BLM, 2008b). Nevada protected animals that meet BLM's 6840 policy definition are those species of animals occurring on BLM-managed lands in Nevada that are:

- 1) "protected" under authority of NAC 501.100 – 503.104;
- 2) have been determined to meet BLM's policy definition of "listing by a State in a category implying potential endangerment or extinction," and

- 3) are not already included as a federally listed, proposed, or candidate species.

The following sensitive species are discussed because they have been observed in the project area or habitat characteristics indicate they may be present in the project area.

Special Status Plants

Least Phacelia (*Phacelia minutissima*)

Least phacelia is known to occur in Elko and Eureka counties and other areas in Nevada, Idaho, and Oregon (NNHP, 2011). This species occurs in vernal saturated (i.e., saturated in the spring), sparsely vegetated, partially shaded to full sun areas of bare soil and mud. Least phacelia has been found in meadows, at the perimeter of corn lily (*Veratrum californicum*), mule-ears (*Wyethia amplexicaulis*) and aspen (*Populus tremuloides*) stands, in sagebrush swales, along creek bed edges, and around springs in flat to gently sloping areas. The species ranges from 6,240 to 8,900 feet AMSL. The recommended survey months are July and August. This species is distinguished from other phacelia species by its small size, small lavender flowers, and stipitate and glandular herbage. Suitable habitat for least phacelia occurs in north-facing drainage swales, spring edges, and aspen stands located in the higher elevations of the project area. Surveys within the project area in potentially suitable habitat (aspen stands, near seeps and other mesic sites) were conducted July 2011, but no observations of this species were made. The habitat sites inspected were heavily used by cattle and did not have a well developed understory or herbaceous cover.

Special Status Wildlife

The project area provides habitat for terrestrial wildlife species designated as special status species. The special status wildlife species or species of local importance identified by the USFWS, BLM, and NDOW with potential to occur in the project area are outlined in Table 6. The two springs found in the area were just wetted, and did not support surface water. No aquatic habitat that might support the USFWS candidate species Columbia spotted frog (*Rana luteiventris*) or BLM-sensitive springsnail species were found in the project area.

USFWS Candidate Species

Greater Sage-Grouse

The greater sage-grouse is currently listed as a candidate species by USFWS, and a BLM sensitive species. On March 5, 2010, the USFWS announced Proposed Rules in the Federal Register for the notice of 12-month findings for petitions to list the greater sage-grouse as a threatened or endangered species. The Proposed Rules were formally announced in the Federal Register on March 23, 2010 under the following reference: 13910 Federal Register / Vol. 75, No. 55 / Tuesday, March 23, 2010 / Proposed Rules (USFWS, 2010).

Table 6 Special Status Species that May Be Present in the Project Area

Common Name	Scientific Name	Status
Mammals		
Preble's shrew	<i>Sorex preblei</i>	BLM Sensitive
Small-footed myotis	<i>Myotis ciliolabrum</i>	BLM Sensitive
Long-legged myotis	<i>Myotis volans</i>	BLM Sensitive
Yuma myotis	<i>Myotis yumanensis</i>	BLM Sensitive
Long-eared myotis	<i>Myotis evotis</i>	BLM Sensitive
Little brown myotis	<i>Myotis lucifugus</i>	BLM Sensitive
Long-legged myotis	<i>Myotis volans</i>	BLM Sensitive
Fringed myotis	<i>Myotis thysanodes</i>	BLM Sensitive, State Protected
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM Sensitive, State Sensitive
Pallid bat	<i>Antrozous pallidus</i>	BLM Sensitive
Hoary bat	<i>Lasiurus cinereus</i>	BLM Sensitive
Big brown bat	<i>Eptesicus fuscus</i>	BLM Sensitive
Western pipistrelle	<i>Pipistrellus hesperus</i>	BLM Sensitive
Silver-haired bat	<i>Lasionycteris noctivagans</i>	BLM Sensitive
Spotted bat	<i>Euderma maculatum</i>	BLM Sensitive, State Threatened
Birds		
Golden eagle	<i>Aquila chrysaetos</i>	BLM Sensitive, State Protected
Northern goshawk	<i>Accipiter gentilis</i>	BLM Sensitive, State Protected
Swainson's hawk	<i>Buteo swainsoni</i>	BLM Sensitive, State Protected
Ferruginous hawk	<i>Buteo regalis</i>	BLM Sensitive, State Protected
Greater sage-grouse	<i>Centrocercus urophasianus</i>	BLM Sensitive, State Protected, Federal Candidate
Loggerhead shrike	<i>Lanius ludovicianus</i>	BLM Sensitive, State Protected
Vesper sparrow	<i>Pooecetes gramineus</i>	BLM Sensitive, State Protected
Brewer's sparrow	<i>Spizella breweri</i>	State Protected
Black rosy-finch	<i>Leucosticte atrata</i>	BLM Sensitive, State Protected
Juniper titmouse	<i>Baeolophus griseus</i>	BLM Sensitive, State Protected
Sage thrasher	<i>Oreoscoptes montanus</i>	State Protected
Sage sparrow	<i>Amphispiza belli</i>	State Protected
Reptiles		
Northern rubber boa	<i>Charina bottae</i>	State Protected

The project area falls within the South Fork Sage-Grouse Population Management Unit (PMU). This PMU is being considered under the Governor's Nevada Sage-Grouse Conservation Strategy by the Northeastern Nevada Stewardship Group as part of greater sage-grouse conservation planning efforts underway for the Elko District. Shrub cover and associated herbaceous plants in the understory is vital as a forage and cover component for greater sage-grouse. Evaluation of habitat values and the possibilities to improve them are considered through this conservation effort.

Floyd et al. (2007) describe greater sage-grouse habitat as “sagebrush steppe habitats with significant bunch grass and forb components. During the winter season, the birds subsist almost entirely on sagebrush.” In the spring, males gather to display on communal strutting grounds, or leks. Females come onto the ground to mate, and subsequently nest, generally within two miles of the lek. Wet meadow and riparian areas are utilized as brood-rearing habitats. These mesic areas provide a crucial source of insects and succulent forage for young birds. Together, the strutting grounds and nesting and brood-rearing areas form a sage-grouse habitat complex, which may encompass areas from valley floors or benches up into the mountains, including mountain meadow habitats.

Greater sage-grouse are present within and adjacent to the project area. The project is located in mapped preliminary priority habitat (PPH) / preliminary general habitat (PGH) areas. There are four active greater sage-grouse lek sites (e.g., Landing Strip, Bullion Meadows, Ferdelford 2, and Emigrant) within two miles of the project boundary. Table 7 presents the information on these leks maintained by NDOW. The Ferdelford 2 lek and Emigrant lek were visited by JBR during the spring of 2011. The Ferdelford 2 lek contained 15 male birds and three hens and the Emigrant lek contained ten male birds. This area is occupied by greater sage-grouse year round and includes nesting, wintering, and brood rearing habitat (NDOW, 2011). No female sage grouse were observed on the leks.

Table 7 Special Status Species that May Be Present in the Project Area

	Lek Date	Last Active	Last Surveyed	Lek Status	Number of Males
Landing Strip	1990	2007	2010	Active	0
Ferdelford 2	2002	2010	2010	Active	18
Emigrant	2009	2010	2010	Active	12
Bullion Meadows	1949	2009	2010	Active	0

The crucial greater sage-grouse season for the project area has been identified as March 15 through June 15 as these dates closely coincide with breeding and brood rearing.

PPH and PGH data and maps have been developed through collaborative effort between the BLM and the NDOW. The map uses the best available data to create a statewide prioritization of greater sage-grouse habitat.

The habitat determination of PPH is defined as having the highest conservation value to maintaining sustainable greater sage-grouse populations. These areas include breeding, brood rearing, and winter concentration areas. The habitat determination of PGH is defined as occupied seasonal or year-round habitat that includes areas of higher quality habitat that may lack a key component such as vegetative structure or herbaceous understory, which prevent it

from meeting PPH. Approximately 70 percent of the project area is designated as PPH and approximately 30 percent of the project area is designated as PGH (Figure 4).

Portions of the project area provide intact sagebrush habitat for greater sage-grouse. Seasonal use could occur as nesting, early brood-rearing, summer, and fall/winter habitat. A greater sage-grouse hen was flushed from sagebrush during general wildlife surveys in the project area.

BLM Sensitive and Nevada State Protected Species

Mammals

Preble's Shrew

The Preble's shrew is known to occur primarily within sagebrush-grassland habitat types, but may also occur in montane shrub (that includes sagebrush) and riparian habitat types (sagebrush-aspen associations) (Montana Field Guide, 2011). In Nevada, Preble's shrews have been found on benches along perennial and ephemeral streams dominated by shrubs (Ports and George, 1990). Sagebrush openings in forested habitats, marshes, and aspen also represent potential habitat (Zevloff, 1988). Intact stands of sagebrush habitat are present within the project area. Benches near streams in the project area tended to be impacted by cattle, reducing the shrub understory. NDOW maps the range of the species as slightly north of the project area (WAPT, 2006).

Pygmy Rabbit

According to the document *Surveying for Pygmy Rabbits, Fourth Draft June 3, 2004, Boise District, Idaho BLM* (Ulmschneider et al., 2004), pygmy rabbits inhabit areas of dense sagebrush in loamy soils deeper than 20 inches with 13 to 30 percent clay content, on flat to moderate slopes, and within the elevation range of 4,500 to 8,000 feet AMSL. Much of the project area includes steep slopes with shallow soils and low-stature sagebrush and other shrubs. Drainage bottoms in mountainous areas may represent potential pygmy rabbit habitat, but in the project area, these sites tended to support a mountain brush community dominated by snowberry rather than sagebrush. The western part of the area includes taller sagebrush, but no pygmy rabbits or evidence of the species (e.g., burrows, pellets, tracks, runways, digging, etc.) was found during field surveys.

Bats

Scattered rocky outcrop features and historic mine shafts and adits within the project area provide potential roosting and hibernation habitat for bats. Aspen stands, springs, and other surface water features in the project area provide foraging habitat for bats. Bat calls were recorded in the project area using two Anabat (bat call recording units) during the nights of June 28 and 29, 2011. The Anabat units were set up in four separate recording locations. These locations were selected for their potential as bat roost sites or foraging areas. Specifically,

Anabats were placed near two adits and near two spring sites. The adits represent potential roost sites. The spring sites as well as open areas adjacent to nearby tree lines represent foraging habitat. Bat species recorded in the area includes the big brown bat, hoary bat, small-footed myotis, long-eared myotis, little brown myotis, long-legged myotis, Yuma myotis, and the silver-haired bat (O'Farrell, 2011). These species and other BLM sensitive bat species with the potential to occur in the project area are described below.

Small-Footed Myotis

The small-footed myotis inhabits desert habitats and utilizes rock crevices, caves, buildings, and abandoned mine workings for roosting, maternity and hibernation. Its primary food source is small insects found along cliffs and rocky slopes (NatureServe, 2011). The species is reported to be most common in pinyon-juniper habitats (Bogen, Valdez and Navo, 1998a). Small-footed myotis were recorded in the project area.

Long-Legged Myotis

The long-legged myotis occurs throughout the western United States primarily in coniferous forests and seasonally in riparian and desert habitats where it is known to roost in abandoned buildings, caves, mines, cliff crevices, and hollow trees (WBWG, 2011). Its primary food sources include moths and other soft-bodied insects. Calls of long-legged myotis were recorded in the project area.

Hoary Bat

The hoary bat is known for its relatively large size and golden-colored fur. Common roosting sites include coniferous and deciduous trees and caves. Hoary bats are common in the Pacific Northwest where they are highly associated with forested habitats (WBWG, 2011). Hoary bats are thought to occur statewide in Nevada (WAPT, 2006). The species is a strong flier and may forage over wide areas. Hoary bats are a migratory species (Bolster, 1998). Primary food sources include beetles, moths, grasshoppers, dragonflies, and wasps. Hoary bats were recorded in the project area.

Townsend's Big-Eared Bat

Townsend's big-eared bat is a permanent resident in North America. Maternity and hibernation colonies generally occur in caves and abandoned mine workings. This species may roost in buildings, and has often been found utilizing mine shafts and adits as maternity roosts and hibernacula. Habitats in the vicinity of roosts include pine forests, pinyon-juniper woodland, and cottonwood bottomland (Montana, 2011). According to a study by the Montana Natural Heritage Program, Townsend's big-eared bats (*Corynorhinus townsendii*) prefer adits extending to a depth of approximately 70 feet at least (Hendricks, 1997). The internal conditions of an adit appear to drive roost selection more than surface conditions do (Sherwin et al., 2000).

Temperature and humidity are thought to be considered by roosting bats when selecting a site, and these variables depend on the depth and complexity of the structure and airflow. Bats appear to prefer roosts with low to moderate levels of airflow, likely because airflow helps to keep roosts from getting too warm or too cold (Gruverl & Keinath, 2006).

Abandoned mine features in the project area represent potential Townsend's big-eared bat roost sites. The species was not recorded during Anabat surveys during baseline data collection, but Townsend's big-eared bats were previously recorded in the project area during an underground survey by BLM in February 2012. Approximately 50 percent of the project area was surveyed during a cold season survey performed during the winter of 2011. Although Townsend's big-eared bats were recorded, they were not found to be hibernating as conditions were less than suitable for hibernacula habitat during BLM's February 2012 surveys.

Big Brown Bat

The big brown bat is a medium- to large-sized bat that is known to roost in buildings, bridges, mines, caves, rock crevices, and even in giant saguaro cacti (WBWG, 2011). Their primary diet includes beetles and they usually forage within a few kilometers of their roost. This bat can be locally common in some urbanized environments. Big brown bats were recorded in the project area.

Spotted Bat

The spotted bat is known to roost in cracks, crevices, and caves, usually high in fractured rock cliffs (WBWG, 2011). This species can range from desert to sub-alpine meadows, including desert-scrub, pinyon-juniper woodland, ponderosa pine, mixed conifer forest, canyon bottoms, rims of cliffs, riparian areas, fields, and open pastures. Spotted bats forage primarily on moths.

Silver-Haired Bat

The silver-haired bat is known to roost primarily in large trees, but will also roost in mines and caves. It forages in the open canopy over meadows and water courses and is associated primarily with North Temperate Zone conifer and mixed conifer/hardwood forests eating medium-sized flying insects (WBWG, 2011). This species were recorded in the project area.

Long-Eared Myotis

The long-eared myotis is a hovering feeder that eats insects such as moths, beetles, flies, lacewings, and true bugs off foliage and from the ground (WBWG, 2011). The species most commonly occurs in coniferous forest (Bogen, Valdez and Navo, 1998b). Known roosting sites include hollow trees, caves, mines, cliff crevices, sinkholes, and rocky outcrops. Long-eared myotis were recorded in the project area.

Little Brown Myotis

The little brown myotis is also commonly called the little brown bat and is among the most widespread and common bats of temperate North America. Common roosting sites for this bat include tree cavities, caves, mines, and buildings. They are also known to utilize caves and abandoned mines for hibernation (WBWG, 2011). The little brown myotis eat flying insects such as mosquitoes, moths, caddisflies, spiders, and small beetles (NatureServe, 2011). Little brown bats were recorded in the project area.

Yuma Myotis

The Yuma myotis inhabits riparian areas, scrublands, deserts, and forests and is commonly found roosting in anthropogenic structures such as bridges, buildings, cliff crevices, and mines and will also roost in trees. Yuma myotis occurrence is often associated with permanent sources of water, including rivers and streams (Bogen, Valdez and Navo, 1998c). Their primary diet is emergent aquatic insects such as caddis flies, midges, and small moths and beetles (WBWG, 2011). The calls of Yuma myotis were recorded during Anabat surveys of the project area.

Pallid Bat

The pallid bat inhabits low desert shrubland, juniper woodlands, and grasslands. It most commonly occurs in low, dry regions with rock outcrops, usually near water, and roosts in rock crevices, buildings, rock piles, tree cavities, shallow caves, and abandoned mines (NatureServe, 2011). Their primary food sources are arthropods such as crickets, grasshoppers, beetles, scorpions, and spiders. No pallid bat calls were recorded during Anabat surveys of the project area.

Western Pipistrelle

The western pipistrelle is the smallest of all North American bats and is usually associated with rocky canyons and outcrops where they are known to roost in small crevices. They are also known to occupy mines and caves (WBWG, 2011). Their food sources include ants, mosquitoes, fruit flies, and leafhoppers. No western pipistrelle calls were recorded during Anabat surveys of the project area.

Birds

Golden Eagle

The golden eagle nests on cliffs and in large trees (occasionally on power poles), and hunt over prairie and open woodlands. Nest locations are selected for their south or east aspect and proximity to sagebrush/grassland hunting areas (Montana, 2011). Common in much of the West, the golden eagle preys mainly on jackrabbits and large rodents but will also feed on carrion. They are partially migratory but remain resident to much of their southern range (Udvardy, 1994). Golden eagles may forage in the project area and potential nesting habitat is available in

the project area. Most cliff and outcrop habitat is located in the southern and central part of the project area. A golden eagle was observed soaring over rocky outcrops in the southern part of the project area, although no potential golden eagle nests were found in this area or elsewhere in the project area.

Northern Goshawk

Northern goshawks generally nest in stands of larger trees with dense canopy cover. In Nevada, northern goshawks usually nest in aspen stands, with nests often constructed very near flowing water. Herron, in Alcorn (1988), estimates 87 percent of goshawk nests in Nevada are found in aspen trees. Nest trees are typically located within 100 feet of water (Herron et al., 1985). Northern goshawks hunt in openings and open understory that allow for catching prey in flight. A northern goshawk nest was reported approximately 0.5 mile from the project area. This nest was reported to have been active in 2000 by NDOW. Northern goshawks feed on a large variety of small mammals and birds (USFWS, 2011a). Northern goshawks may forage in the project area in some larger drainages in the southern and central part of the project area.

Swainson's Hawk

Swainson's hawks are seasonal residents and nesters in the project area, migrating to South and Central America in the winter (Ryser, 1985). This hawk nests in clumps of trees, often in agricultural and riparian areas or near springs. Swainson's hawks feed mostly on large insects and small mammals; however, they also take bats, birds, and amphibians. Swainson's hawk may forage in the project area and potential nesting habitat is available in the project area.

Ferruginous Hawk

Ferruginous hawks nest in scattered juniper trees at the interface of the pinyon-juniper zone and desert shrub communities overlooking broad open valleys (Montana, 2011). The ferruginous hawk preys mostly on rodents and rabbits, but would also take birds and reptiles. Ferruginous hawks may forage in the project area.

Potential nesting habitat in the form of juniper edge overlooking broad valleys is available but limited in the project area. No ferruginous hawks were observed and no potential ferruginous hawk nests were found in the area.

Loggerhead Shrike

Loggerhead shrikes are typically associated with greasewood and sagebrush communities (Montana, 2011). They also frequent open country in valleys and foothills, juniper or pinyon-juniper woodlands, mahogany stands, and the edges of ranches and towns. Dense stands of trees and shrubs are used for nesting and roosting sites, as well as for hunting perches (Ryser, 1985). These small predators are known to prey on rodents, insects, and even on other small birds, often

impaling their victims on thorns of trees, shrubs or on barbed wire fences. Potential habitat for the loggerhead shrike is available primarily in the lower elevations of the project area.

Vesper Sparrow

Vesper sparrows live on the ground in dry fields, pastures, meadows, and sagebrush steppe habitats. Their nests are commonly found between sagebrush openings. In the Great Basin, vesper sparrows are often found in mixed grass and sagebrush with limited shrub cover and a high percentage of bare ground. Nesting occurs most often in middle elevation montane habitats (Floyd et al., 2007). Potential habitat for the vesper sparrow is common in the project area.

Brewer's Sparrow

The Brewer's sparrow nests in sagebrush habitats containing dense cover and feed primarily on grasshoppers and beetles (Montana, 2011). According to Floyd et al. (2007), Brewer's sparrows occur in sagebrush habitats "from basin bottoms to mountain meadows." Potential habitat for the Brewer's sparrow occurs in sagebrush habitats. Such habitats occur in the majority of the project area.

Black Rosy-Finch

Black rosy-finches nest and spend summers in mountains, nesting in boulders and rock crevices. In winter, they move down into valleys and roost in caves, mine shafts, and barns. Habitat for the black rosy-finch is available in the project area. The Atlas of the Breeding Birds of Nevada (Floyd et al., 2007) suggests black-rosy finches would be expected to breed in alpine habitats at higher elevations than those found in the project area. Winter movements are much less predictable, and occurrence in the project area during the winter season is possible.

Juniper Titmouse

The juniper titmouse occurs in juniper and pinyon-juniper habitats primarily in the Great Basin. This species was formerly known as the plain titmouse, but was recently "split" (identified as a separate species). Juniper titmice occur as year-round residents in pinyon and juniper woodlands (Udvardy, 1994). The birds are cavity nesters, and may utilize either natural cavities or abandoned woodpecker cavities. Potential habitat for the juniper titmouse is available in pinyon-juniper woodland and mountain mahogany habitats in the project area. These habitats occur in approximately 13 percent of the project area.

Sage Thrasher

The sage thrasher is a medium-sized, long-tailed songbird that inhabits sagebrush shrubland and scrub habitats and feeds primarily on insects and berries (Cornell, 2011). Sage thrashers typically nest in intact, fairly dense stands of sagebrush, with big sagebrush favored (Holmes and Barton, 2003; Reynolds et al., 1999 in Floyd et al., 2007). Floyd et al. (2007) note; however,

that sage thrashers may also nest in shrublands dominated by greasewood and bitterbrush. Potential habitat for the sage thrasher is available in the sagebrush habitats of project area, with areas of dense sagebrush having the highest potential for sage thrasher occurrence.

Sage Sparrow

The sage sparrow inhabits scrub and shrubland and feeds primarily on grass seeds and insects (Cornell, 2011). Sage sparrows are usually associated with sagebrush, both where sagebrush occurs as the dominant and in mixed stands. Sage sparrows are also found in salt desert scrub habitats (Floyd et al., 2007). The sage sparrow spends much of its time on the ground foraging and running between shrubs. It inhabits scrub and shrubland and feeds primarily on grass seeds and insects (Cornell, 2011). Potential sage sparrow habitat is available in the project area.

Reptiles

Northern Rubber Boa

The northern rubber boa is a small, shiny, stout snake (from 12 to 24 inches) with small eyes and a blunt tail. They are slow-moving, docile snakes, usually found under logs and rocks in forested areas (Montana, 2011). The rubber boa feed primarily on small mice, shrews, salamanders, snakes, and lizards. Potential habitat for the northern rubber boa may occur in the project area.

3.2.11.2 Environmental Consequences

Special Status Plants

Federally listed plant species are not known to occur in the project area and the project would have no impact on federally-listed plants.

BLM sensitive plant species are not known to occur in the project area. No sensitive plant species were observed in the project area during surveys. Least phacelia was not observed in the project area during surveys and habitat would not be affected, therefore, there would be no effect on least phacelia.

Special Status Wildlife

Direct impacts on the ESA candidate species greater sage-grouse and to BLM sensitive and/or Nevada State protected bats and other special status wildlife species sensitive to human activity and noise could include temporary displacement as a result of the Proposed Action. Construction of roads and drill pads and the operation of drilling equipment could disturb special status wildlife species due to the presence of humans and by creating noise and dust. Habitat fragmentation would be limited because the drilling program would be dispersed over the 3,169-acre project area with a maximum of 200 acres (or six percent) of disturbance over the life of the project. Impacts to special status wildlife species and their habitats would also be lessened by reclaiming access and drill roads, and drill sites no longer needed for future exploration as

quickly as possible. Long-term impacts to habitat would be limited since reclamation and reestablishment of vegetation would take place between one and three years after project completion. Establishment of shrub species, including sagebrush, would occur over a longer time frame, requiring eight to ten or more years. Failure of initial reseeding and reclamation efforts could extend this time frame.

While impacts from mineral exploration drilling have been subject to less study than impacts related to energy development, Connelly et al. (2000) cite the findings of Braun (1987) and Remington and Braun (1991), who found that sage-grouse were displaced by oil development and coal-mining activities. These authors found that sage-grouse numbers returned to pre-disturbance levels once the activities ceased. Connelly et al. (2000) note however, that Aldridge's (1998) found that at least six leks in Alberta, Canada, were disturbed by energy development and 4 of these were abandoned. Connelly et al. (2000) further cite Lyon's findings from Wyoming, where "female sage-grouse captured on leks disturbed by natural gas development had lower nest-initiation rates, longer movements to nest sites, and different nesting habitats than hens captured on undisturbed leks (Lyon 2000)". Braun (1998) concluded that sage-grouse "may repopulate an area following energy development but may not attain population levels that occurred prior to development."

Relative to the Proposed Action, Connelly et al. (2000) noted that road construction may result in habitat loss and fragmentation. In particular, these authors recommend adjusting the timing of construction activities to minimize disturbance of sage-grouse breeding activities.

GSV anticipates between three and five drill rigs would be operating in the area at any one time. Typically, however, three rigs would be in operation at a time. Drilling would occur 24 hours per day, seven days per week. At any one time, a total of between 10 and 15 personnel would be present in the area. Between 12 and 15 vehicle trips are expected to occur in the area daily.

Connelly et al. (2004) assess the effects of various natural and anthropogenic factors on sage-grouse and sage-grouse habitat. Nevada is identified as a state in which anthropogenic activities that affect sage-grouse are relatively low. These authors note that habitat fragmentation may occur in small increments, but that even a small amount of habitat fragmentation near key habitats could have a detrimental effect on sage-grouse population viability (With and Crist, 1995; With and King, 1999; Fahrig, 2001). The BLM notes that four leks occur within two miles of the project boundaries.

Knick et al. (2011) noted the presence of roads can result in increased wildlife mortality due to collisions, affect wildlife behavior due to noise and habitat changes, and increase the spread of noxious or invasive weed species. These authors note that Barton and Holmes (2007) found that

nearby roads resulted in reduced nesting success in songbirds, but that this was offset by lower numbers of predators using the area. Knick et al. (2011) note that the potential effects of off-highway-type vehicle use on sagebrush habitats and sagebrush obligate species, including sage-grouse, have not been well studied.

Braun (2006) discusses the impacts of noise on sage-grouse, and notes that sage-grouse numbers on leks within one mile of coal bed methane compressor stations in Wyoming were consistently lower than on leks not affected by this disturbance. Braun (2006) also states that roads, particularly roads near leks, adversely affect sage-grouse. Braun differentiates between road types, identifying primary roads (usually paved), secondary roads (mostly gravel), and trails (usually dirt, commonly expressed as two-tracks). Braun states that “primary roads are most negative for greater sage-grouse because of vehicle frequency, speed, and noise.” The presence of secondary roads may also be negative “depending again upon vehicle frequency, speed, and noise,” while “trails,” if used seasonally and receive light vehicle use, are least problematic for sage-grouse.

The potential impacts of the Proposed Action would vary with the habitats affected and the distance from key habitats, including leks, water sources, and brood-rearing habitat. Drilling in previously disturbed areas or in low-stature sagebrush habitat (black sagebrush or low sagebrush habitat, or in grass-dominated habitat) may result in little impact to sage-grouse. Drilling in undisturbed montane sagebrush steppe habitat may result in sage-grouse avoiding suitable foraging and nesting areas. Disturbance in this habitat type, which comprises the majority of the project area, has a greater potential to disturb sage-grouse. With the BLM temporal restrictions within three miles of sage-grouse leks sites, activity would be limited within three miles of the leks between March 15 and June 15.

Impacts of the Proposed Action on sage-grouse could be reduced by clustering the drilling locations, such that disturbance is limited to a specific area, particularly during the March 15 to June 15 period, rather than being dispersed over a wider area. This would also limit the traffic footprint to a specific area while drilling occurs, before moving to another target area.

Direct impacts to bat species, such as BLM Sensitive Townsend’s big-eared bats, could occur from drilling activities. If the project drills in areas known to contain underground workings utilized by bats as hibernacula and winter roosts, and compromises habitat integrity, that habitat type would be damaged. An EPM has been included with a 400-foot drilling buffer around known locations of winter roosts and hibernacula to minimize the potential effects; however, it may not be 100 percent effective. With the EPM and pre-activity surveys, effects would be minor.

According to the Bridgeport Travel Management Final Environmental Impact Statement, the Townsend big-eared bats are sensitive to motorized travel occurring within 50 meters, or about 165 feet of roost sites (USDA, 2010). The proposed drilling activities would be expected to produce a similar or potentially higher noise output as vehicular travel on the site.

Golden eagles are protected by the MBTA and the Bald and Golden Eagle Protection Act, both of which prohibit take of these species. The Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance provides guidance to conduct informed impact analyses and mitigation during the NEPA process (USFWS, 2010). Golden eagle foraging habitat is present in the project area and potential nesting habitat (e.g., cliffs and ledges) was observed in vicinity of the project area. In order to avoid impacts to individual golden eagles and their habitat, implementation of the EPMs outlined in Section 3.2.12 for migratory birds would ensure that prior to surface disturbance nesting surveys for migratory birds (including golden eagles) would be conducted and any identified nests would be avoided as specified based on the species. Should active nests be found, the BLM may impose spatial and/or seasonal buffers.

Direct disturbance of up to 200 acres of sagebrush shrubland habitat, used by special status species, such as greater sage-grouse, within the 3,169-acre project area could occur. Destruction or disruption of an active nest or burrow may affect individual success, but is not expected to contribute to any detectable loss of viability for the regional population of these species. The disruption of habitat use could extend until operations cease. Lost habitat would not be replaced until the disturbed areas are successfully reclaimed. Direct impacts to special status species would be minimized by the implementation of the EPMs outlined in Section 3.2.12 including a pre-disturbance migratory bird nesting survey, clearing proposed drill site areas prior to construction, flagging areas to avoid, restricting travel on access routes during critical periods, and observing speed limit restrictions in the project area. Impacts to special status wildlife species are expected to be short-term and minor.

3.2.12 Migratory Birds

3.2.12.1 Affected Environment

“Migratory bird” means any bird listed in 50 CFR 10.13. All native birds found commonly in the United States, with the exception of native resident game birds, are protected under the MBTA. The MBTA prohibits taking of migratory birds, their parts, nests, eggs, and nestlings. Executive Order 13186, signed January 10, 2001, directs federal agencies to protect migratory birds by integrating bird conservation principles, measures, and practices.

Additional direction comes from the Memorandum of Understanding (MOU) between the BLM and USFWS, signed January 17, 2001 and updated August 31, 2010. The purpose of the MOU

is to strengthen migratory bird conservation through enhanced collaboration between the BLM and USFWS, in coordination with state, tribal, and local governments. The MOU identifies management practices that impact populations of high priority migratory bird species, including nesting, migration, or over-wintering habitats, on public lands, and develops management objectives or recommendations that avoid or minimize these impacts.

Based on data compiled over the last several decades by the BLM and NDOW it is known that a wide variety of migratory birds are found within the project area. These species are associated with a variety of habitat types, and many occur within the project vicinity year round. Appendix B contains a compilation of the migratory bird species potentially present within the project area based on habitat requirements present for certain species.

3.2.12.2 Environmental Consequences

The Proposed Action would result in 200 acres of new disturbance to the project area. Depending on the time of year, the project may have the potential for destruction of active nests or disturbance of breeding behavior of migratory bird species. A qualified biologist would conduct nest surveys prior to any surface disturbing activities that would occur during the avian breeding season (March 15 through July 31). If nests are located, or if other evidence of nesting (i.e., mated pairs, territorial defense, carrying nest material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) would be delineated and the buffer area would be avoided to prevent destruction or disturbance to nests and birds until they are no longer active. Direct impacts to breeding birds could include the possible direct loss of nests or indirect effects (e.g. abandonment) from increased human noise and human presence within close proximity of an active nest site. Loss or alteration of up to 200 acres of migratory bird habitat would be temporary until productive vegetation communities are successfully re-established through reclamation. During the period of temporary loss of habitat, impacts would be negligible because the disturbance would be dispersed and suitable habitat is available in the surrounding area. The impacts to migratory birds with the implementation of the Proposed Action with the EPMs discussed in Section 2.1.7, is expected to be negligible and short-term.

3.2.13 Climate Change

3.2.13.1 Affected Environment

Throughout its history, the temperature of earth has fluctuated from much colder to much hotter than the current time. Global temperature changes result from numerous factors such as location and relative position of land mass, activity of the sun, and type and concentration of gasses in the atmosphere as caused by life on earth or eruption of volcanoes. Recent data suggest that human activity has increased the release of sufficient volumes of greenhouse gasses, carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons, to

influence climate change. Modeling efforts predicting the impacts from human-caused climate change show temperature variations are expected to occur from one to two degrees Fahrenheit within the next nine years for the southwest part of the United States (Karl et al., 2009) to two to six degrees centigrade within the next century (NASA, 2011).

3.2.13.2 Environmental Consequences

The Proposed Action is to conduct mineral exploration drilling activities to confirm the presence of a valuable mineral deposit. Equipment used in the exploration program would emit incremental amounts of greenhouse gases. The incremental increase is expected to have a negligible impact on climate change. A shift in temperature from global climate change could affect revegetation success if revegetation species do not have a broad tolerance to abiotic stress. The tolerance of species used in the reclamation mix is unknown, but is likely high for grasses and forbs. These species were selected for inclusion because of their ability to reestablish on disturbed sites which indicates some tolerance to stress.

3.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no changes to environmental baseline conditions within the project area; therefore, no additional impacts are anticipated.

3.4 CUMULATIVE IMPACTS

This section analyzes the potential cumulative impacts to the resources from past, present, and reasonably foreseeable future projects combined with the Proposed Action within the project area. A cumulative impact has been defined as the impact which results from the incremental impact of the action, decision, or project when added to other past, present, and RFFAs, 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.

Negligible impacts were identified to special status plants, hazardous and solid waste, livestock and grazing; these resources are not addressed in the cumulative impacts assessment. Since there would be no direct or indirect effects on cultural resources, there can be no cumulative effects.

Cumulative impacts are addressed for the following resources:

- Non-Native Invasive and Noxious Species
- Vegetation, Non-game Wildlife
- Water, Wetlands, Riparian, and Aquatic
- Special Status Species
- Wildlife

For these resources, cumulative effects study areas (CESAs) have been determined (Figure 6). The area defined by each CESA is specific to the resource analyzed and includes the geographic area where the environmental effect of the Proposed Action could be reasonably detected. For wildlife, including special status species, the CESA contained the administrative planning/management area that contained the affected population, as recommended by NDOW. Table 8 lists the CESA for each of the potentially impacted resources.

Table 8 Cumulative Effects Study Areas

Resource	Cumulative Effects Study Area		
	Name	Acres	Description
Non-Native Invasive and Noxious Species Vegetation Non-game Wildlife Water, Wetlands, Riparian, and Aquatic	Watershed/General Wildlife CESA	267,463	Dixie Creek and Lower Pine Creek
Special Status Species: Greater Sage-Grouse	Greater Sage-Grouse CESA	1,396,868	South Fork PMU
Wildlife-Mule Deer	Mule Deer CESA	2,976,638	Hunt Units 062, 064, 065, 067, and 068
Wildlife-Pronghorn Antelope and Elk	Pronghorn Antelope and Elk CESA	627,656	Hunt Unit 065

3.4.1 Past and Present Actions

Past and present actions in the four CESAs include livestock grazing and range improvements; wildland fire and rehabilitation; recreation; railroads, roads, utility and other ROWs; mineral exploration; and mining.

Livestock Grazing and Range Improvements

Livestock grazing within the CESAs on public land is permitted through the BLM and the United States Forest Service (USFS). The extent of livestock grazing managed by BLM within each CESA is shown in Table 9.

Table 9 BLM Grazing Allotments within the CESAs

	Watershed/General Wildlife CESA	Greater Sage-Grouse CESA	Mule Deer CESA	Pronghorn Antelope and Elk CESA
CESA Acres	267,463	1,396,868	2,976,638	627,656
Number of Allotments within CESA	22	92	92	50
Percent of CESA Overlapped by an Allotment		34%	82%	55%

Recreation

Past and present recreation within the CESA consists of activities such as hunting, hiking, camping, shooting, all-terrain vehicle use, rock hounding, and other dispersed recreation. The South Fork State Recreation Area is located within some of the CESAs. This recreation area consists of 1,650 acres with camping, boating, and picnicking facilities.

Roads and Rights-Of-Way

There are existing roads and utility ROWs within each CESA; these include power transmission lines and substations; water supply pipelines, tanks and pump stations; telephone lines; gas lines; railroads; and dirt, gravel and paved roads. Table 10 shows the disturbance acres associated with major and maintained roads and railroads within the CESAs. There are several hundred miles of unmaintained roads and utility ROWs within each CESA that are not included in Table 10 because disturbances were not easily quantified using aerial photographs.

Table 10 Past and Present Major Roads and ROW Acres within the CESAs

ROW	Watershed/General Wildlife CESA	Greater Sage-Grouse CESA	Mule Deer CESA	Pronghorn Antelope and Elk CESA
Interstate 80*	0	1,891	1,091	0
Highway 278	126	133	194	194
Highway 227	0	42	42	42
Highway 228	0	158	158	158
Highway 306	0	0	36	0
Highway 225	0	0	539	0
Highway 226	0	6	230	0
Highway 93	0	30	0	0
County Roads	133	948	2,540	492
Railroads	0	1,915	2,061	558
Ruby Pipeline	0	0	420	0
TS Power Plant	0	0	600	0
Total	259	5,123	7,911	1,444
Percent of CESA	0.01	0.4	0.3	0.2

*Assuming a 200-foot disturbance width for Interstate 80 and railroads and a 50-foot disturbance width for the highways and maintained county roads.

Disturbance from Ruby Pipeline calculated using 14 acres per mile within the CESA.

Wildland Fire

Wildland fires occurring within the CESAs between 1996 and 2011 and their associated acres are listed in Table 11. Impacts from wildland fires include the disturbance to vegetation, conversion of vegetation cover type, and potential for soil erosion.

Table 11 Past Wildland Fire Acres within the CESAs

Fire year	Watershed/General Wildlife CESA	Greater Sage-Grouse CESA	Mule Deer CESA	Pronghorn Antelope and Elk CESA
1996	0	0	0	0
1997	0	0	0	0
1998	0	0	0	0
1999	65,168	207,464	349,986	213,588
2000	0	0	8,568	4,909
2001	1,201	1,201	200,456	1,698
2002	0	638	440	0
2003	0	0	302	150
2004	0	0	370	0
2005	0	29,175	105,975	4,245
2006	7,059	33,822	526,940	34,415
2007	34,680	23,422	82,812	12,661
2008	0	0	0	0
2009	0	202	233	0
2010	0	2,686	3,376	2,686
2011	236	522	410,740	522
Total	108,344	304,171	1,696,383	274,872
Percent of CESA	40%	22%	57%	44%

Mineral Exploration and Mining

The Carlin Trend is a mineralized zone approximately 50 miles long by five miles wide in north-central Nevada where multiple mining operations have been developed. Table 12 lists the past and present projects and disturbance area for CESAs.

There are multiple past and present exploration drilling programs throughout the CESAs. Some of these exploration programs include past exploration at the Railroad property.

Table 12 Past and Present Mineral Exploration and Mining Acres within the CESAs

	Watershed/ General Wildlife CESA	Greater Sage-Grouse CESA	Mule Deer CESA	Pronghorn Antelope and Elk CESA
Newmont Emigrant Project	1,418	1,418	1,418	1,418
Newmont Rain Mine	961	961	961	961
Newmont North Operations Area	0	0	8,708	0
Newmont South Operations Area	0	0	9,878	0
Barrick Goldstrike Corporation Betze/Post Mine Complex	0	0	9,016	0
Newmont Woodruff Creek Exploration Area	66	66	66	66
Newmont - Chevas	0	0	168	0

	Watershed/ General Wildlife CESA	Greater Sage- Grouse CESA	Mule Deer CESA	Pronghorn Antelope and Elk CESA
Newmont - High Desert	0	0	164	0
Newmont - Mike Exploration Area	0	0	48	0
Newmont - Mike Mine	0	0	100	0
Rodeo Creek Gold - Ivanhoe/Hollister Development Block	0	0	95	0
Trio Gold Corp - Rodeo Creek	0	0	42	0
Barrick - Rossi	0	0	51	0
Marigold - Dee Gold Mine	0	0	84	0
Barrick - Ben	0	0	30	0
Newmont - Carlin	0	0	255	0
Newmont - Emigrant Springs	155	155	155	155
Royal Standard Minerals	20	20	20	20
Barrick - Storm Underground, Dee Arturo	0	0	814	0
Newmont - Bootstrap	0	0	1,900	0
Newmont - Blue Star/Genesis, Section 36, Deep Star, Lantern, North Lantern, Bullion Monarch	0	0	4,739	0
Newmont - North Leach Area	0	0	1,526	0
Newmont - Carlin Mine, Pete	0	0	3,673	0
Newmont - Leeville Underground	0	0	566	0
Total	2,620	2,620	44,477	2,620
Percent of CESA	0.98	0.19%	1.49%	0.42%

3.4.2 Reasonably Foreseeable Future Actions

RFFAs within the CESA would include continued livestock grazing, emergency fire rehabilitation, dispersed recreation, ROW authorizations, mineral exploration, and mining. Wildland fire, while not an action, could also occur and have cumulative impacts.

Livestock Grazing

There would be continued livestock grazing and range improvement activities with the CESAs. The need for changes to current livestock grazing practices within these allotments would be evaluated through BLM's rangeland health assessment process.

Recreation

Recreation activities and impacts may increase as a result of population growth near Elko and Carlin. There would be continued uses such as hunting, hiking, camping, shooting, all-terrain vehicle use, rock hounding, dispersed recreation, and the South Fork State Recreation Area.

Land Use

There is the potential for future ROWs that could include disturbance to areas within the CESAs.

Wildland Fire

There is potential for future wildland fires within the CESAs. The locations and extents of these fires are unknown at this time. Rehabilitation measures after fire would be implemented to restore burned areas. It is also unknown how effective rehabilitation would be on future fires.

Mineral Exploration and Mining

Mineral mining and exploration activities are expected to continue in response to robust commodity prices and based on current supply of and demand for minerals and commodities. There are potentially pending Notices of Intent and Plans of Operations that could include future disturbance to areas within the CESAs.

Table 13 Reasonably Foreseeable Mineral Exploration and Mining Acres within the CESAs

	Watershed/ General Wildlife CESA	Greater Sage-Grouse CESA	Mule Deer CESA	Pronghorn Antelope and Elk CESA
Barrick - Storm Underground, Dee Arturo	0	0	2,774	0
Newmont - Carlin Mine, Pete	0	0	100	0
Newmont - Mike Mine	0	0	100	0
Newmont Rain Mine	100	100	100	100
Rodeo Creek Gold - Ivanhoe/Hollister Development	0	0	25	0
Barrick - Ren	0	0	30	0
Total	100	100	3,129	100
Percent of CESA	0.04%	0.01%	0.11%	0.02%

3.4.3 Cumulative Impact Analysis

3.4.3.1 Non-Native Invasive and Noxious Species

Past, present, and RFFAs within the watershed/general wildlife CESA (Figure 6) that contribute to the spread and establishment of non-native invasive and noxious species are actions that cause surface disturbance and vegetation loss. Within the CESA, such actions are primarily wildland fire, ROW projects, mineral exploration, and mining. Present and RFFA ROW, mineral exploration, and mining projects affect less than one percent of the CESA. If they occur on BLM land, these actions require BLM authorization, and therefore, cumulative impacts would be minimized through the environmental review process for each project. Prior to approval, BLM would require the applicant to reclaim temporary disturbances and implement weed control measures. Typical measures include use of suitable BLM-approved seed mixes with only certified weed-free and tested seed, and implementation of prompt and appropriate reclamation techniques. Cumulative effects of present and reasonably foreseeable wildland fire on public land affect a greater portion of the CESA (at least 57 percent), but are minimized because BLM routinely implements emergency watershed protection measures after a fire that include

reseeding to reduce the potential for weed establishment. Therefore, implementation of the Proposed Action including the EPMs, in combination with past, present, and RFFAs within the cumulative area would have a minor cumulative impact from non-native invasive and noxious species.

3.4.3.2 Water Resources, Wetland, Riparian, and Aquatic Species

Past, present and RFFA within the Pinon Mountains for the Dixie Creek and Lower Pine Creek watersheds have impacted or have the potential to impact water, wetland, riparian and aquatic species. Livestock grazing, undersized and improperly placed culverts, roads, wildfires, noxious weed infestations and surface disturbance associated with a variety of land uses occur throughout these watersheds and have contributed to degraded stream and riparian habitat conditions as well as reduced water quality. Where protective fencing has been constructed along portions of Trout Creek in the Lower Pine Creek watershed and at Cherry Springs in the Dixie Creek watershed, riparian habitat conditions have improved.

The Proposed Action would add minor adverse cumulative impacts to water quality and wetlands, riparian and aquatic species within the CESA. However, these impacts would be reduced or mitigated through adoption of project design features to avoid drainages and riparian areas and through implementation of EPMs and BMPs.

Vegetation

Vegetation across the CESA has been affected by wildland fire. Although vegetation returns after a fire, the vegetation community may be temporarily or permanently altered as wildland fire tends to convert the pre-fire vegetation community into a community that supports fewer shrubs and trees and more cheat grass and invasive annuals. Much of the past fire affected areas have been reseeded or have naturally revegetated following disturbance, although the exact acreages and success of rehabilitation efforts is unknown. Past losses have likely been minimized by the passage of time and through BLM's rehabilitation efforts. Present and reasonably foreseeable losses from wildland fires on BLM land are expected to be minimized because post-fire rehabilitation and seeding by BLM would continue. Loss of vegetation from ROWs, mineral exploration, and mining has been minor, affecting less than one percent of the CESA. Loss of vegetation from reasonably foreseeable future applications for ROW, mineral exploration, and mining projects on public land would continue, but impacts would be minimized for all projects that require BLM authorization through the environmental review process. Similar to the Proposed Action, BLM would require successful reclamation of disturbed areas. Therefore, the combination of the Proposed Action, in combination with past, present, and reasonably foreseeable future projects are anticipated to have minor cumulative impacts on vegetation.

General Wildlife and Migratory Birds

The CESAs for wildlife resources encompass a portion of NDOW's Management Area 6 (Hunting 45 Units 062, 064, 067, and 068) as depicted in Figure 6. The CESAs include a contiguous area that provides important seasonal habitat for general wildlife species as well as mule deer and pronghorn. Cumulative impacts on wildlife in the CESAs have resulted primarily from wildfires, mineral exploration, mining activities, non-native invasive weeds, livestock grazing, drought, urbanization, and seeding of native range with introduced herbaceous species. Other industrial development activities in the area such as power transmission lines and roads also contribute to impacts to wildlife. Development of reasonably foreseeable mine projects would continue to impact big game in their respective CESAs. Most mine areas proposed for development within the Carlin Trend have been within or adjacent to existing mine areas impeding mule deer migration corridors between critical winter and summer ranges. Past, present, and RFFAs in the wildlife, mule deer, and pronghorn CESAs have resulted, or would result, in the direct disturbance of habitat (Table 14). A portion of the cumulative disturbance areas have been, or would be, reclaimed or have recovered materially (i.e., wildfire areas). The reclaimed areas, and areas associated with habitat conversion, would be capable of supporting wildlife use; however, species composition and densities may change. Overall, most of the local wildlife populations (e.g., big game, raptors, migratory birds, amphibians) that occur in the CESAs would continue to occupy their respective ranges and breed successfully, although population numbers may decrease relative to the amount of cumulative habitat loss and disturbance from incremental development.

Past fire has as occurred across 39 percent of CESA for general wildlife, but has affected a much higher portion of the mule deer, pronghorn antelope, and elk CESA (Figure 6 and Table 11). Approximate 57 percent of the mule deer CESA (not all of which is mule deer habitat) and 44 percent of the pronghorn antelope and elk CESA have been affected by fire. Although vegetation and wildlife habitat returns after a fire, the quality of the habitat may be diminished. Cheatgrass and invasive annuals tend to replace wood species in post-fire vegetation communities. Shrub and tree cover is important to a wide variety of wildlife because it provides nesting and roosting structures, protection from predators, thermal cover, forage, and food sources. The degree to which past fire has affected wildlife across the CESAs is unknown, but the increasing trend of cumulative losses from present and future fires would be minimized because BLM routinely implements post-fire rehabilitation and reseedling.

Table 14 Cumulative Wildlife, Mule Deer, Pronghorn, and Elk Habitat Disturbance

CESA and Habitat Type	Total Acres of Habitat	Acres of Habitat Disturbed by Fire	Acres Disturbed by the Proposed Action	Acres of Habitat Disturbed by Mining Operations (Past, Present, and RFFAs)	Acres of Habitat Disturbed by Transmission Line Construction (Past, Present, and RFFAs)	Total Acres of Habitat Disturbed
Mule Deer- Summer	1,842,682	228,159	200	0	30	228,389
Pronghorn –Summer	448,488	186,530	200	2,620	0	189,350
Elk – All Season	358,326	18,012	200	2,620	0	20,832

BLM manages livestock grazing on 99 percent of the general wildlife CESA; 82 percent of the mule deer CESA; and 55 percent of the pronghorn antelope and elk CESA. The USFS also manages large tracts of the mule deer and pronghorn antelope and elk CESAs. Livestock grazing affects wildlife when there is competition for forage and water sources. Impacts to game and non-game wildlife is minimized because BLM manages range in accordance with its RMP objectives, which directs the agency to manage range in a manner that maintains and improves habitat for wildlife and sensitive species (BLM, 1987). USFS has similar Forest Plan objectives for allotments they manage.

Encroaching human activities along the foothills of the Tuscarora Range and the Carlin Trend have resulted in cumulative impacts such as animal displacement and habitat fragmentation in areas that are utilized as migration corridors between summer and winter ranges. NDOW collaring data has shown that mule deer tend to avoid large-scale mine disturbance areas along the Carlin Trend and choose specific routes through mine sites. These routes include some of the remaining migration corridors in the Carlin Trend. Within the wildlife and mule deer CESAs mining has removed wildlife habitat, primarily as a function of fencing and/or land disturbance associated with mining operations. Mine groundwater pumping activities within the CESAs may result in a reduction or loss of flows in springs and seeps that support wildlife habitat (i.e., wetlands and riparian areas). Reductions or elimination of flows in springs and seeps could impact wildlife species dependent on these sites (e.g., big game and bats). Past, present, and RFFAs in the wildlife and mule deer CESAs have resulted, or would result, in the direct disturbance of habitat (Table 14). A portion of the cumulative disturbance areas have been, or would be, reclaimed or have recovered materially (i.e., wildfire areas). The reclaimed areas, and areas associated with habitat conversion, would be capable of supporting wildlife use; however, species composition and densities may change.

In addition, wildfire has created one of the primary cumulative impacts on these species. As shown in Table 11, from 1996 to 2011, thousands of acres of wildlife habitat have been impacted

by large-scale wildfires. Wildfire has resulted in the temporary to long-term loss of shrubs that provide forage and cover as habitat components, which has caused reductions in mule deer herds throughout their respective CESAs. Impacts of wildfires to terrestrial wildlife species include loss of habitat (forage and cover), which can lead to mortality of mule deer and pronghorn, as well as other species. The loss of canopy cover and forb and grass diversity is prevalent across the burned areas, and the recovery of these plant communities would vary in terms of time and cover. In many areas, native shrub communities have been replaced by cheatgrass-dominated grasslands. A breakdown of cumulative disturbance by the proposed project, wildfire, and mining operations is presented in Table 14.

Overall, most of the local wildlife populations (e.g., big game, raptors, migratory birds, amphibians) that occur in the CESAs would continue to occupy their respective ranges and breed successfully, although population numbers may decrease relative to the amount of cumulative habitat loss and disturbance from incremental development. Habitat loss by past ground disturbance from ROW projects, mineral exploration, and mining have been relatively minor (less than 1 percent of the general and game wildlife CESAs).

The Proposed Action would contribute an additional 200 acres of disturbance to the past, present, and RFFAs. The combined effects are anticipated to have minimal cumulative impacts on wildlife due to EPMs and minimization measures routinely practiced by BLM.

Special Status Species Greater Sage-Grouse

The greater sage-grouse CESA encompasses the 1,396,868-acre South Fork PMU. Cumulative actions that impact greater sage-grouse habitat include wildland fire, which has affected 22 percent of the CESA. Wildland fire removes sagebrush and promotes conversion to grassland, often dominated by the invasive species cheatgrass. Large areas of shrubland habitat representing greater sage-grouse habitat in the South Fork PMU have been affected by wildland fire. Reclamation has been conducted but further monitoring may be needed and fire suppression is recommended (Northeast Nevada Stewardship Group, Inc., 2004). Livestock grazing managed by BLM occurs on 34 percent of the CESA. Livestock grazing can impact greater sage-grouse forage availability, with the nature of the impact determined by stocking rates and range conditions. Properly, managed, livestock grazing can remove decadent material and encourage new growth. Improper grazing including grazing throughout the hot season on an annual basis can reduce forage and can negatively impact water sources and associated wet meadow vegetation. Wet meadow habitat represents greater sage-grouse brood-rearing habitat, and as such represents a key component of greater sage-grouse habitat. Habitat losses from ROW projects, mineral exploration, and mining within the CESA are relatively few (less than one percent), although locally large contiguous blocks of habitat have been lost from mining.

Cumulative actions have contributed to an increasing trend of habitat loss, modification, and fragmentation of greater sage-grouse habitat within the CESA. However, the Proposed Action, in combination with past, present, and RFFAs are anticipated to have minor cumulative impacts on greater sage-grouse due to protection measures implemented or minimization measures required by BLM. The greater sage-grouse is a candidate for listing under the federal ESA. BLM districts, including the Elko District, are in the process of revising its RMPs in accordance with BLM Instruction Memoranda 2012-44 to increase protection of greater sage-grouse core habitat areas to avoid federal listing. Until long-term conservation measures are developed and put into a revised RMP, the Elko District would follow Instruction Memoranda 2012-43 and implement conservation measures for all ongoing and proposed authorizations and activities that affect greater sage-grouse.

As described previously, wildland fires on lands managed by BLM would continue to be rehabilitated and seeded to restore productive wildlife habitat. Expected revisions to the Elko RMP emphasizing the need to protect and restore greater sage-grouse habitat should increase the emphasis on rehabilitating greater sage-grouse habitat impacted by wildland fire. Livestock grazing would continue to be managed by BLM in a manner that maintains and improves habitat for wildlife and sensitive species in accordance with its RMP objectives (BLM, 1987). Reasonably foreseeable projects requiring BLM authorization would go through an environmental review process that would include an assessment of direct, indirect and cumulative impacts to greater sage-grouse. Prior to approval, BLM would require the applicant to institute mitigation measures to protect greater sage-grouse.

4.0 MITIGATION AND MONITORING

4.1 MITIGATION

The Proposed Action includes applicant-proposed EPMS (Section 0) that adequately protect environmental resources considered in this EA. Therefore, no mitigation measures are proposed.

4.2 MONITORING

The BLM would conduct monitoring of the Proposed Action to assess whether the EPMS outlined in Section 2.1.7 are being followed. For example, monitoring could confirm that non-native invasive and noxious weeds are not becoming established or that cultural resources are not being impacted by the Proposed Action.

5.0 CONSULTATION AND COORDINATION

This EA was prepared by JBR under the technical direction of the BLM Tuscarora Field Office, Elko, Nevada. Assistance was provided by BLM resource specialists (meetings and subsequent conversations); consultation with other local, state, and federal agency resource personnel; review of company and agency files; field reconnaissance; and review of supporting documentation.

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5.3 PUBLIC NOTICE AND AVAILABILITY

The BLM Tuscarora Field Office distributed to resource specialists an initial internal scoping document dated April 12, 2011, to determine resources that may be affected by the Proposed Action. Copies of this EA can be obtained at the BLM Tuscarora Field Office.

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FIGURES

APPENDIX A

Noxious Weed Management Plan

RAILROAD EXPLORATION PROJECT NOXIOUS WEED MANAGEMENT PLAN

1.0 INTRODUCTION

Gold Standard Ventures Corp (GSV) is proposing to conduct surface exploration operations for precious metal mineral deposits (gold) on public and private lands in the Railroad Mining District approximately 25 miles southwest of Elko, Nevada. The proposed exploration operations would consist of constructing access roads and drilling sites, drilling core holes with a truck mounted drill rig, and upon completion of the exploration operations, plugging and abandoning the drill holes, and reclaiming the drill pads and constructed access roads. The Railroad Exploration Project is located on public lands administered by the Bureau of Land Management (BLM) Tuscarora Field Office and on private lands in Township 31 North (T31N), Range 53 East (R53E) and T30N, R53E, Elko County, Nevada. This Noxious Weed Management Plan was developed to help control noxious weed species from becoming established in areas disturbed by this project.

Noxious weeds within Nevada are defined in the Nevada Revised Statutes Chapter 555.05 as *“any species of plant which is, or is likely to be, detrimental or destructive and difficult to control or eradicate.”* The following laws, regulations, policies, and agreements apply to the management of noxious weeds:

- BLM Manuals 9011, 9014, and 9015;
- Partners Against Weeds Action Plan;
- BLM 1991 Environmental Impact Statement, Vegetation Treatment on BLM Lands in Thirteen Western States;
- Executive Order 11312;
- Federal Noxious and Invasive Weed Laws; and
- Nevada Revised Statutes Chapter 555.

The Nevada Department of Agriculture Plant Industry Division provides a list of all weeds currently listed as noxious for the State of Nevada. Noxious weeds in Nevada are divided into three categories as identified below. This management plan treats all three categories equally as far as treatment when identified.

Category A: weeds are currently not found or found in limited distribution throughout the state. These species are actively excluded from the state and actively eradicated. Control is required by the state on all infestations.

Category B : weeds are those that are established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur.

Category C: weeds are species that are currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer.

2.0 NOXIOUS WEED MANAGEMENT PLAN

In order to minimize the establishment of noxious weeds within the project area, GSV would use the following EPMs:

Noxious Weed Control

- Noxious weed infestation would be reported to BLM upon discovery. The extent of the infestation would be documented on a map and recorded with a GPS unit;
- GSV would treat any noxious weed infestations with BLM-approved herbicides. Application would be coordinated with the BLM;
- Treatment of infested areas would occur at the appropriate time of year (prior to seed production);
- Herbicide application would conform to all federal and state regulations; and
- If straw is used as a BMP to control erosion and siltation, bales would be certified weed-free.

Equipment and Vehicles

- GSV would restrict vehicle traffic to defined roads or overland travel routes to reduce potential mechanical transport of noxious weed seeds; and
- To avoid the transport of weed seeds, all equipment and vehicles would be inspected and power-washed, if necessary, to ensure they are free of dirt, debris, and plant material, before arriving on-site.

Reclamation

- GSV would revegetate the site with a BLM-Approved seed mix composed of quick-growing species to provide a quick vegetative cover;
- Complete concurrent reclamation when feasible in order to minimize disturbed areas where weed species could establish;
- The seed mix would be certified pure live seed and weed free; and
- Noxious weeds would not be counted towards vegetative cover during evaluations for vegetative bond release.

APPENDIX B

Migratory Birds

Migratory Birds and Habitat Potentially Located In or Near the Project Area

Bird Species	Sagebrush	Mountain Shrub	Cliffs/Talus	Mountain Riparian	Lowland Riparian	Pinyon/Juniper	Aspen Woodland
American kestrel	X	X				X	
American robin	X	X		X	X		
Ash-throated flycatcher					X		
Bank swallow					X		
Black-headed grosbeak	X	X	X*				X
Black rosy finch		X				X	
Black-throated gray warbler		X					
Black-throated sparrow	X						
Blue grosbeak		X			X		
Blue grouse				X	X		
Blue-gray gnatcatcher		X				X	
Brewer's sparrow	X						
Brewer's blackbird	X						
Broad-tailed hummingbird				X			X
Burrowing owl	X	X					
Bushtit		X		X		X	
Canyon wren			X				
Calliope hummingbird	X	X		X			X
Cassin's finch							X*
Chipping sparrow		X					
Clark's nutcracker						X	
Cliff swallow			X				
Columbian sharp-tailed grouse							X*
Common nighthawk		X				X	
Common raven			X				
Common poorwill		X				X	
Cooper's hawk	X	X		X			X
Dark-eyed junco		X				X	
Dusky flycatcher							X
Ferruginous hawk	X		X			X	

Bird Species	Sagebrush	Mountain Shrub	Cliffs/Talus	Mountain Riparian	Lowland Riparian	Pinyon/Juniper	Aspen Woodland
Fox sparrow	X			X			
Gray flycatcher	X					X	
Gray vireo		X				X	
Green-tailed towhee	X						
Golden eagle			X				
Horned lark	X						
Juniper titmouse						X	
Lark sparrow	X						
Lewis' woodpecker	X			X			X
Loggerhead shrike	X	X					
MacGillivray's warbler		X		X*			
Mountain bluebird		X					X
Mountain chickadee		X					
Northern flicker	X						
Northern goshawk	X		X	X			X
Orange-Crowned warbler	X	X		X			X
Pinyon jay						X	
Plain titmouse		X					
Prairie falcon	X		X*				
Red-naped sapsucker	X			X			X
Red-shafted flicker	X						
Rock wren			X				
Greater sage-grouse	X*						
Sage sparrow	X						
Sage thrasher	X						
Say's phoebe			X				
Scrub jay		X					
Scott's oriole						X	
Short-eared owl		X					
Southwest willow flycatcher					X		
Swainson's hawk	X	X					

Bird Species	Sagebrush	Mountain Shrub	Cliffs/Talus	Mountain Riparian	Lowland Riparian	Pinyon/Juniper	Aspen Woodland
Swainson's thrush							X
Turkey vulture	X		X			X	
Vesper sparrow	X	X					
Violet-green swallow			X				
Virginia's warbler				X	X	X	
Warbling vireo				X			
Western bluebird		X				X	
White-breasted nuthatch		X					
White-throated swift			X				
Willow flycatcher				X			
Western meadowlark	X	X					
Wilson's warbler				X*			X
Yellow-breasted chat				X	X		

* "Obligates" are species that are found only in the habitat type described in the section. [Habitat needed during life cycle even though a significant portion of their life cycle is supported by other habitat types]

(NatureServe, 2011 and Great Basin Bird Observatory, 2005).

APPENDIX C

Agency Correspondence