

# EXHIBIT 4

## Kings Valley Lithium Exploration Project EA

# **ENVIRONMENTAL ASSESSMENT**

## **DOI-BLM-NV-W010-2010-0001-EA**

### **Kings Valley Lithium Exploration Project**

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**December 2009**

*Prepared by:*

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Cooperating Agency

Winnemucca District Office / Nevada



It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

BLM/NV/WM/EA-10/05+1792

DOI-BLM-NV-W010-2010-0001-EA

**WESTERN LITHIUM CORPORATION  
KINGS VALLEY LITHIUM EXPLORATION PROJECT  
HUMBOLDT COUNTY, NEVADA  
ENVIRONMENTAL ASSESSMENT**

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## ACRONYMS

amsl	above mean sea level
ACEC	Area of Critical Environmental Concern
BAPC	Bureau of Air Pollution Control
BLM	Bureau of Land Management
BMPs	Best Management Practices
BMRR	Bureau of Mining Regulation and Reclamation
CEQ	Council on Environmental Quality
CESA	Cumulative Effects Study Area
CFR	Code of Federal Regulations
DHWOPD	Double H/Whitehorse Obsidian Procurement District
DOI	Department of the Interior
°F	degrees Fahrenheit
EA	Environmental Assessment
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act
GBBO	Great Basin Bird Observatory
H	Horizontal
ID	Interdisciplinary
IM	Informational Memorandum
MBTA	Migratory Bird Treaty Act
MDB&M	Mount Diablo Base and Meridian
MFP	Management Framework Plan
MOU	Memorandum of Understanding
MSDS	Material Safety Data Sheets
MSHA	Mine Safety and Health Administration
NAC	Nevada Administrative Code
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
NNHP	Nevada Natural Heritage Program
NRCS	Natural Resources Conservation Service
NRS	Nevada Revised Statutes
NEPA	National Environmental Policy Act
PFYC	Potential Fossil Yield Classification
Plan	Plan of Operations
PMU	Population Management Unit
ppm	parts per million
RFFA	Reasonably Foreseeable Future Actions
SR	State Route
US 95	United States Highway
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
V	Vertical
VRM	Visual Resource Management
WLC	Western Lithium Corporation

**WESTERN LITHIUM CORPORATION  
KINGS VALLEY LITHIUM EXPLORTION PROJECT  
ENVIRONMENTAL ASSESSMENT**

**1 INTRODUCTION**

**1.1 Introduction**

The Kings Valley Lithium Exploration Project (Project) is located on the north side of Thacker Pass between the Montana Mountains and the Double H Mountains in Humboldt County, Nevada. The Project encompasses nearly 1,210 acres and ranges in elevation from 4,830 feet to 5,275 feet above mean sea level (amsl), with an average elevation of approximately 5,040 feet amsl. The Project would consist of approximately 75 acres of mineral exploration located on public land administered by the Bureau of Land Management Winnemucca District Office, Humboldt River Field Office (BLM). The Project area is located within all or portions of Township 44 North (T44N), Range 35 East (R35E), sections 4, 5, 6, 7, 8, 9, 17, and 18, Mount Diablo Base and Meridian (MDB&M) (Project Area) approximately 53.5 miles north-northeast of Winnemucca, Nevada (Figure 1.1.1).

Western Lithium Corporation (WLC) conducted mineral exploration activities in the summer and fall of 2007 under Notice #NVN-083592 (Notice). Under the Notice, WLC created approximately five acres of surface disturbance associated with drill site and road construction. WLC proposes to expand the authorized exploration activities to include an additional 70 acres of surface disturbance. Therefore, in accordance with 43 Code of Federal Regulations (CFR) 3809 and Nevada Administrative Code (NAC) 519.A, WLC submitted in July 2008 a Plan of Operations/Permit for Reclamation (Plan) (Record No. N85255/Reclamation Permit No. 0301) to the BLM and Nevada Division of Environmental Protection (NDEP) Bureau of Mining Regulation and Reclamation (BMRR). Expanded exploration activities would include drill site and sump construction, establishment of monitoring wells, road construction, and bulk sampling excavation (Proposed Action) within the 1,210-acre Project Area. This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act of 1969 (NEPA), as amended, to examine the effects of the Proposed Action.

**1.2 Purpose and Need**

The purpose of this action is to provide WLC the opportunity to conduct exploration including drill site and sump construction, road construction, monitoring wells, and bulk sampling excavation, necessary to verify the lithium mineral resource.

The need for action is established by the BLM's responsibility under its 2008 Energy and Mineral Policy, the Federal Land Policy and Management Act of 1976 (FLPMA), and BLM Surface Management Regulations at 43 CFR 3809, to respond to an exploration plan of operations and to take any action necessary to prevent unnecessary or undue degradation of the lands.





## Land Use Conformance Statement

The Proposed Action described in this EA are in conformance with the Paradise-Denio Management Framework Plan (MFP) (BLM 1982), which states that the BLM should “make no land use decisions that would interfere with mineral development in areas (mining districts) of significant current and past mining activity.”

### **1.3 Relationship to Laws, Regulations, and Other Plans**

On lands open to location under the General Mining Law of 1872, as amended (Mining Law), the BLM administers the surface acres of public land and federal subsurface mineral estates under the Mining Law and the FLPMA. FLPMA also governs the BLM’s administration of public lands not open to location under the Mining Law.

Although the zoning for federal lands is not shown in the Humboldt County Regional Master Plan (Humboldt County 2002), the Project Area is located on BLM managed land which is zoned M3 - open space, which is consistent with the Proposed Action.

### **1.4 Issues**

An interdisciplinary (ID) team meeting was held at the BLM office in Winnemucca on October 28, 2008. During the meeting, the ID team identified the resources to be addressed in this document as outlined in Chapter 3. A scoping letter was sent to the public by the BLM on December 8, 2008. The following general concerns related to the Proposed Action were identified by the BLM and the public:

- Air Quality;
- Cultural Resources;
- Hazardous Wastes;
- Migratory Birds;
- Native American Religious Concerns;
- Public Access;
- Vegetation;
- Water Resources;
- Wetlands and Riparian Zones; and
- Wildlife.

## 2 ALTERNATIVES INCLUDING THE PROPOSED ACTION

### 2.1 Proposed Action

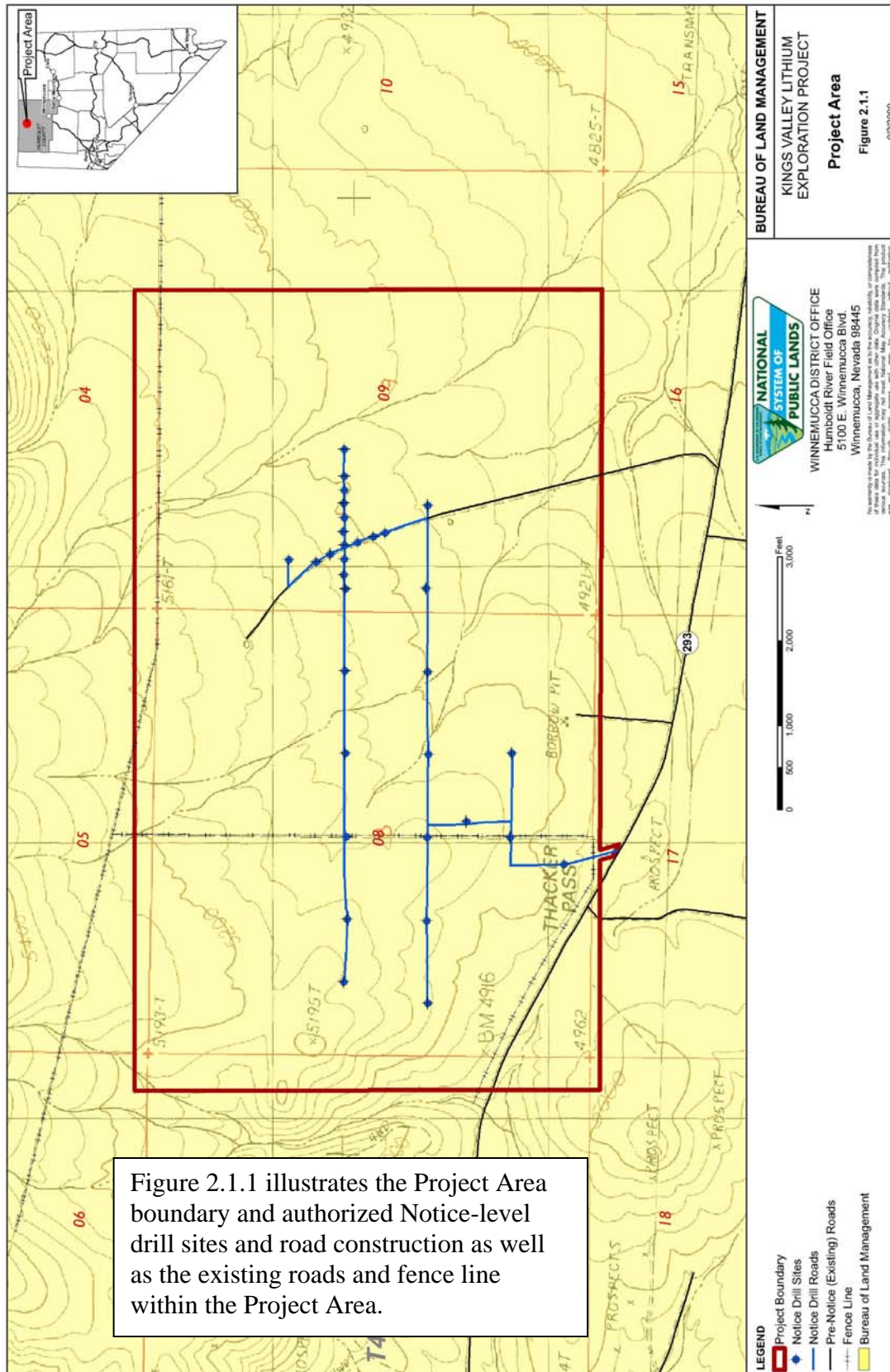
The Proposed Action consists of expanding the authorized Notice-level exploration activities within the 1,210-acre Project Area. Expanded activities would include the construction of exploration roads, drill sites, monitoring wells, sumps, bulk sampling, and reclamation over a period of five years. The Proposed Action would increase the authorized Notice-level surface disturbance of five acres to a total of 75 acres. Figure 2.1.1 shows the authorized Notice-level disturbance. The increased amount of disturbance would occur in phases over a five-year period. All Project activities would be located on NSPL administered by the BLM. The authorized and proposed surface disturbance is outlined by type of activity in Table 2.1-1.

**Table 2.1-1: Acreage of Authorized and Proposed Project Disturbance**

Exploration Activity	Authorized	Proposed		Total Disturbance Acres
	Notice-level Disturbance Acres	Proposed Phase I Acres	Subsequent Phases Acres	
Constructed Roads	3.78	14.94	25.92	44.64
Constructed Drill Sites (includes sumps and spoil piles)	1.22	6.61	12.20	20.03
Bulk Sample Excavations and/or Trenches	0.00	0.00	10.33	10.33
<b>Total Disturbance Acres</b>	<b>5.00</b>	<b>21.55</b>	<b>48.45</b>	<b>75.00</b>
<b>Total Authorized Acres &amp; Proposed</b>	<b>5.00</b>	<b>70.00</b>		<b>75.00</b>

As outlined in Table 2.1-1, WLC has projected that the total existing and proposed surface disturbance would equal 75 acres. Surface disturbance beyond the existing disturbance cannot be specified at this time because the specific locations for the proposed activities would be based on the results of each phase of the Project, including the current and ongoing exploration work. Therefore, WLC would conduct the exploration work and bonding in phases. As a result, the cost estimate included in the Plan includes existing disturbance and the projected first phase of exploration activities, which equals 20.89 acres. An additional 49.11 acres of disturbance would occur in subsequent phases over the remainder of the proposed five-year Project life. Locations of the disturbance in subsequent phases would be based on the results of previous exploration activities. In order to provide the BLM with relevant information concerning the location and types of surface disturbance and to avoid sensitive resources, WLC would provide documentation under each phase (i.e., work plans and maps) for the areas of planned exploration prior to commencing exploration activities. The BLM would provide a review of the submittal prior to initiating activities under that phase.





Additionally, WLC would provide the BLM and BMRR an annual report on, or before, April 15<sup>th</sup> of each year that documents the surface disturbance locations, types of surface disturbance, and any completed concurrent reclamation that had taken place the previous year.

### **2.1.1 Location and Access**

The Project is located in parts or all of T44N, R35E, sections 4, 5, 6, 7, 8, 9, 17, and 18, MDB&M in Humboldt County, Nevada (Figure 2.1.1). The Project is located on the United States Geological Survey (USGS) Thacker Pass 7.5-minute topographic quadrangle. The Project is accessed by traveling north on United States Highway 95 (US 95) from Winnemucca, Nevada, approximately 48 miles to Orovada, Nevada. From Orovada, continue by traveling west on State Route 293 (SR 293, Kings River Road) and proceeding approximately 19.5 miles to a well marked dirt road on the north side of SR 293. Access within the Project Area is provided by existing dirt roads, and authorized Notice-level roads (Figure 2.1.1).

### **2.1.2 Exploration Drill Sites**

For bonding purposes, the first phase of the Proposed Action would consist of exploratory drilling from a total of 146 drill sites. WLC is unable to predict the number of drill holes that would be drilled in subsequent phases over the life of the Project since drilling activities would be contingent upon the results from previous exploration. However, an estimated 20.03 acres of disturbance from drill site construction is expected for the Project based on a total of 500 drill sites, including those authorized under the Notice (Table 2.1-1). The amount of surface disturbance for each drill site would vary based on the slope and terrain where the site would be constructed. Generally, drill sites would be constructed measuring approximately 30 feet by 60 feet (0.04 acre) and would avoid drainages. Multiple drill holes may be drilled at each site based on geology and the results from previous exploration. Holes would be drilled vertically using a reverse circulation or core drill rig to an average depth of approximately 600 feet, although some holes may be drilled to a depth of 1,000 feet or more depending on geology. Drill cuttings not bagged and removed for sampling would be used as a source of backfill and replaced down the borehole.

All drill holes would be plugged prior to the drill rig moving from the drill site in accordance with Nevada Revised Statute (NRS) 534, NAC 534.4369, and NAC 534.4371. If ground water is encountered, holes would be plugged pursuant to Nevada Administrative Code (NAC) 534.420. If casings are set in a borehole, either the boreholes would be completed as wells and plugged pursuant to NAC 534.420, or the casings would be completely removed from the boreholes when they are plugged. The upper portion of the borehole may be permanently cased if the annulus is completely sealed from the casing shoe to surface pursuant to NAC 534.380. In the event that the upper portion of a borehole becomes permanently cased, the casing would be perforated in accordance with NAC 534.420.

Sumps and spoil piles would be constructed as necessary within the drill site disturbance area to collect drill cuttings and manage drill water. Sumps would measure approximately six feet wide by eight feet long and approximately five feet deep. Sumps would be constructed with a ramp at one end to provide easy egress for animals that happen to enter the sump.

### **2.1.3 Trench Construction and Bulk Sampling**

Bulk sampling for lithium testing is part of the Proposed Action. The sampling would consist of developing surface excavations and/or trenching. Three excavations would be tested and would be approximately 50 feet wide by 100 feet long and up to 30 feet deep. The locations of the bulk sampling sites have not yet been identified and would vary based on exploratory drilling results. The top ten feet of the trench would be excavated using a Cat D7 bulldozer or equivalent and would have a temporary 1 horizontal (H):1 vertical (V) slope ratio. A Cat 325 excavator or equivalent would then be used to excavate a two-foot wide trench along the bottom 20 feet of the sampling site to a total sample depth of approximately 30 feet. Excavated material would be stockpiled in an area 40 feet wide by 50 feet long at the end of each trench. The lower two-foot wide by 20-foot deep portion of the trench would be filled immediately after sampling for safety reasons. The remaining ten-foot deep by 50-foot wide portion of the upper trench would have sloped sides and may remain open until the completion of the Project, at which time it would be refilled and reclaimed. It is estimated that up to 20 tons of material would be obtained as part of the bulk sampling program.

Growth media (e.g., topsoil and alluvium) would be salvaged and placed in a separate stockpile from the remainder of the excavated material. The growth media would be redistributed after the trench has been refilled to provide enhanced revegetation potential. To prevent access by humans or animals, WLC would erect and maintain an orange barrier fence surrounding open trenches until they are filled and reclaimed.

### **2.1.4 Road Construction**

For bonding purposes, WLC would construct approximately 50,044 feet of road with a ten-foot running surface and an average disturbance width of 13 feet under the first phase of the Proposed Action. Road grades would be kept to an average of six percent or less to minimize erosion. During subsequent phases of the Proposed Action WLC would utilize existing exploration roads to the extent possible; however, alternate road locations may be determined in the field based on geologic information collected during exploration activities. As shown in Table 2.1-1, the disturbance from constructed exploration roads under the Proposed Action is expected to result in approximately 40.86 acres in addition to the 3.78 acres of authorized road construction under the Notice, for a total of 44.64 acres. The proposed surface disturbance caused by road construction shown in Table 2.1-1 has been estimated to include roads constructed on terrain with a maximum of a six percent slope.

Road construction would be performed with a Cat D7 bulldozer or equivalent and would occur intermittently throughout the life of the Proposed Action. Balanced cut and fill construction would be used to the extent practicable to minimize the exposed cut slopes and the volume of fill material. Since the depth of the cut would be kept to a minimum, growth media removed during construction would be stockpiled as the fill slope to be used during reclamation. Road construction within drainages would be avoided where possible. When drainages must be crossed by a road, Best Management Practices (BMPs) established by the NDEP and the Nevada Division of Conservation Districts Handbook of Best Management Practices, adopted by the State Environmental Commission on December 7, 1994, would be followed to minimize the surface disturbance and erosion potential. Culverts would generally not be installed on

exploration roads; however, if a culvert is necessary, the placement and size would be approved by the BLM and BMRR.

Routine road maintenance may be required and, when necessary, would consist of minor seasonal regrading, smoothing rutted surfaces, filling holes, and the reestablishment of water bars as outlined in the BLM Road Manual. Maintenance of existing roads would only be conducted on an as-needed basis. Road rock would be obtained from a BLM-approved source should it become necessary for the improvement of exploration roads in the Project Area. Erosion control would be monitored annually in the spring and fall, as well as after major storm events when Project activities are occurring.

### **2.1.5 Equipment**

WLC would conduct exploration drilling with two track-mounted or truck-mounted reverse circulation and core drill rigs and support equipment. Drill crews and Project personnel would access the Project Area in four-wheel drive vehicles (i.e., pick-up trucks). Support equipment that would be used in conjunction with each of the drill rigs includes the following: one 5,000-gallon water truck; mud mixing tanks and pump; a circulation tank; all-terrain vehicles; one pipe truck; one booster truck; one auxiliary air compressor; and one portable light plant/generator.

Generally, a Cat D7 bulldozer or equivalent would be used to construct roads, drill sites, and trenches where needed. A Cat 325 excavator or equivalent would also be used to construct trenches. Roads and drill sites would be reclaimed using an excavator and all-terrain vehicle with a seed broadcaster, or comparable method. All equipment would be properly muffled and equipped with suitable and necessary fire suppression equipment such as hand tools and a fire extinguisher. Water trucks at the Project Area would be used in the event of a fire.

All Project-related traffic would observe prudent speed limits to enhance public safety, protect wildlife and livestock, and minimize dust emissions. All Project-related equipment operation would be conducted in conformance with applicable federal, state, and local health and safety regulations. All portable equipment, including drill rigs, support vehicles, and drilling supplies, would be removed from the Project Area during extended periods of non-operation.

### **2.1.6 Water Use**

Water would be used under the Proposed Action for dust suppression and during drilling. Appropriate water use/rights permits would be obtained as required. Water would be obtained from a pond on the Kings Valley Ranch located approximately three miles from the Project Area (Figure 1.1.1). Kings Valley Ranch is located on private land and the water source is a private source. Water would be transported from the pond to the Project Area on an existing private dirt access road and on SR 293.

### **2.1.7 Work Force**

Standard drilling procedures would require that a geologist be on site throughout drilling activities to manage the drillers, log drill holes, determine maximum drill depth, and advise the drill rig operator as needed. Standard drill rig crews would consist of a drill rig operator and one



to two helpers. The drill rig operator would be in charge of the drill rig itself and would make decisions regarding drilling techniques and equipment. Laborers would be responsible for removing and boxing the recovered core samples, removing the cuttings from the drill rigs, mixing drilling fluids in a portable mud tank, operating the water truck, assisting with drilling operations, and conducting maintenance as necessary. Up to a total of eight individuals (three contract personnel per drill rig crew and one WLC-employed geologist per drill rig for two drill rigs) could be in the Project Area at the same time. Drilling activities would generally be limited to daylight hours but may continue up to 24 hours per day for some drill rigs.

### **2.1.8 Surface and Ground Water Control**

BMPs for sediment control would be utilized during construction, operation, and reclamation to minimize sedimentation from disturbed areas. The Project is bisected by two small ephemeral drainages that traverse the site in a northwest-southeast direction. Site drainage is predominantly in the form of sheet flow during precipitation events.

- Surface water drainage control would be accomplished by diverting precipitation event surface flows from the exploration area, isolating runoff, and utilizing appropriate control measures.
- Proposed road construction would avoid drainages whenever possible. When drainages must be crossed by a road, BMPs would be followed to minimize surface disturbance and erosion potential.
- Drill cuttings and drill fluids would not be allowed to flow off drill sites.
- Sumps would be used to collect cuttings and manage drill water and would be filled at the end of drilling activities. The management of drill cuttings would be conducted in a manner that is consistent with BMPs and includes the use of one or all of the following: sediment traps or sumps; straw bales (certified weed-free); silt fences; the distribution of clarified water from sediment traps through perforated pipes in order to minimize erosion from channeling; and the use of common, centrally located sediment sumps. If needed, the use of a sand separation system would be used in conjunction with the sediment traps/sumps such that the recirculation of drilling fluids would be maximized.

None of the drilling fluids to be used under the Proposed Action contain hazardous substances and all are approved for well drilling. Material Safety Data Sheets (MSDSs) for common drill additives are included in the Spill Contingency Plan in the Plan.

#### *Monitoring Wells*

WLC proposes to complete five of their drill holes as ground water monitoring wells, if needed for future data collection. The monitoring wells would be plugged in accordance to NAC 534.420. A dewatering pump test would also be completed if necessary.



### **2.1.9 Solid and Hazardous Materials**

All refuse generated by the Project would be disposed of at an authorized, off-site landfill facility consistent with applicable regulations. No refuse would be disposed of on site. Porta potties would be available in the Project Area for use by Project personnel. Water and/or nontoxic drilling fluids or products, including abantonite, shale inhibitor/friction reducer, bentonite, borehole stabilizer, cement, and hydraulic cement, would be utilized as necessary during drilling and would be stored at the Project Area.

Hazardous materials utilized within the Project Area would include diesel fuel, gasoline, and lubricating grease. Approximately 400 gallons of diesel fuel and gasoline would be stored in fuel delivery systems on vehicles and drill rigs. Approximately 100 pounds of 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 Nevada Department of Transportation (NDOT) and Mining Safety and Health Administration (MSHA). In the event hazardous or regulated materials were spilled, measures would be taken to control the spill, and the BLM and NDEP would be notified as required. Any hazardous substance spills would be handled in accordance with WLC's Spill Contingency Plan which stipulates the immediate clean-up of the spilled substance and any resulting waste (e.g., oil, noxious fluids, chemicals, or contaminated materials) transferred off site in accordance with all applicable federal, state, and local regulations. Contract drill crews would maintain spill kits on site for use in case of a spill.

### **2.1.10 Reclamation**

Reclamation would be completed to the standards described in 43 CFR 3809.420. Reclamation activities on public land for the Proposed Action would be designed to achieve post exploration land uses consistent with the BLM's land use management plans for the area. Reclamation activities would be conducted after exploration activities when it has been determined that exploration disturbance is no longer needed. Reclamation would begin at the earliest practicable time within exploration areas that have been deemed inactive, without potential, or completed. Earthwork (e.g., regrading and reshaping) and revegetation activities would be limited by the time of year during which they can be effectively implemented. In general, earthwork and drainage control would be completed in the summer or early fall. Seedbed preparation would generally be completed in the fall, either concurrently with or immediately prior to seeding. Seeds would be sown in late fall to take advantage of winter and spring precipitation and optimum spring germination potential. Early spring seeding may be utilized for areas not seeded in the fall. In either case, seeding would not take place when the ground is frozen or snow covered. Table 2.1-2 outlines the anticipated reclamation schedule on a quarterly basis. Site conditions and/or yearly climatic variations may require that this schedule be modified to achieve maximum revegetation success. Reclamation activities would be coordinated with the BLM and BMRR as necessary. The reclamation of the Proposed Action is expected to take place within approximately one year from the time of commencement of final reclamation activities. Revegetation success is anticipated to take up to three years from the time of seeding.

**Table 2.1-2: Anticipated Exploration Reclamation Schedule**

TECHNIQUES	Quarter				Year(s)
	1 <sup>st</sup> Jan.- Mar.	2 <sup>nd</sup> April- June	3 <sup>rd</sup> July- Sept.	4 <sup>th</sup> Oct.- Dec.	
Earthwork					Within two years of Project completion
Seeding					Within two years of Project completion
Monitoring					Three years beyond regrading and reseeding

Existing roads would be utilized for exploration activities as much as practicable, minimizing the need for new road construction. All WLC drill sites, sumps, and roads constructed under the Proposed Action would be reclaimed. Concurrent reclamation activities during the exploration program would involve the management of drill sites to contain cuttings and drilling fluids, plugging drill holes, monitoring road conditions during periods of inclement weather, and keeping work sites clean and safe. All drill holes would be plugged prior to the drill rig vacating the drill site as described in Section 2.1.2 above. Soils capable of serving as growth media would be salvaged and stockpiled as part of the fill slope of roads and drill pads. In addition, as much as possible of the organic soil matter would be salvaged to minimize compaction and promote aeration during reclamation. Soil amendments would not be considered necessary in those areas where sufficient growth media are available. During extended periods of non-operation or seasonal closure of exploration activities, all exploration equipment and supplies would be removed from the Project Area.

The regrading and reshaping of all constructed drill sites, exploration roads, and bulk sampling excavations would be completed to approximate the original surface topography. Fill material, enhanced with growth media, would be pulled onto the roadbeds to fill the road cuts and restore the slope to the preexisting natural contours. Regrading and reshaping activities would be completed with a Caterpillar 325 excavator or equivalent. Drill pads and tire tracks (trails created by drill rigs) from overland travel would be lightly scarified and left in a rough state as necessary to relieve compaction, inhibit soil loss from runoff, and prepare the seed bed for revegetation. Bulk sampling excavations would be refilled and topped with growth media as described in Section 2.1.3 above.

Should any drainages be disturbed under the Proposed Action they would be reshaped to recreate the pre-construction channel contours. The resulting channels would be of the same capacity as up and downstream reaches and would be made non-erosive by use of surface stabilization techniques, such as rip-rap, where necessary and ultimately revegetated.

Following the earthwork, all reclaimed areas would be broadcast seeded with a BLM approved seed mix (Table 2.1-3) at the appropriate time of year for optimum seed sprouting and plant growth. Only certified weed-free seed would be used for reclamation seeding. The seed mix is based on known soil and climatic conditions and was selected to establish a plant community that would support the post-exploration land use. The mix is designed to provide species that can exist in the environment of northwestern Nevada, are proven species for revegetation. Broadcast seeding would be completed using a cyclone-type bucket spreader or mechanical blower at an application rate of approximately 8.6 pounds of pure live seed per acre. Broadcast seed would be

covered by harrowing, raking, or other appropriate site-specific methods as necessary to provide seed cover and enhance germination. Reclaimed surfaces would be left in a textured or rough condition (small humps, pits, etc.) to enhance moisture retention and revegetative success while minimizing erosion potential. Changes and/or adjustments to the reclamation plant list and/or application rate would be made in consultation with, and approved by, the BLM and BMRR.

**Table 2.1-3: Proposed Revegetation Seed Mix**

Common Name*	Scientific Name	Pounds/Acre (pure live seed)
Fourwing saltbush	<i>Atriplex canescens</i>	3.0
Wyoming big sagebrush	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	0.2
Western yarrow	<i>Achillea millefolium</i>	0.1
Forage kochia	<i>Bassia prostrata</i>	0.5
Crested wheatgrass	<i>Agropyron cristatum</i>	2.5
Blue flax	<i>Linum lewisii</i>	0.5
Alfalfa	<i>Medicago sativa</i>	1.8
<b>Total</b>		<b>8.6</b>

\* Seed mixtures may change during concurrent and final reclamation. The changes would be based on targeting specific soil/disturbance types and experience gained during concurrent reclamation during the life of the Project, on test plot results, and changes in agency recommendations.

Post-reclamation maintenance would consist of remedial dirt work and reseeding. Site monitoring for stability and revegetation success would be conducted once a year, during the spring or fall, for a minimum of three years until attainment of the revegetation standards established in the Nevada Guidelines for Successful Revegetation for the Nevada Division of Environmental Protection, the Bureau of Land Management, and the USDA Forest Service (Instruction Memorandum #NV 99-013).

Additional reclamation activities include the abandonment of monitoring wells and the removal of all equipment, supplies, and materials brought onto public land at the end of the Project life. Other materials, including scrap, trash, and unusable equipment, would be removed on a daily or weekly basis and disposed of in accordance with federal, state, and local regulations.

Post-closure management would commence on any reclaimed area following completion of the reclamation work for that area. Post-closure management would extend until the reclamation of the site or component has been accepted by both the BLM and BMRR. For sites reclaimed early in the operations of the Proposed Action, management of the reclaimed areas would occur concurrently with exploration operational site management. Annual reports showing reclamation progress would be submitted to the BLM and BMRR.

### 2.1.11 Surface Occupancy

Under CFR 3809 Part 3710 Section 3715.0-5, occupancy means full or part-time residence on the public lands. It also refers to activities that involve residence; the construction, presence, or maintenance of temporary or permanent structures that may be used for such purposes; or the use of a watchman or caretaker for the purpose of monitoring activities. Residence or structures include, but are not limited to, barriers to access, fences, tents, motor homes, trailers, cabins, houses, buildings, and storage of equipment or supplies. WLC plans to utilize a portable storage trailer that is approximately 20 feet long and eight feet wide. The trailer is used to safely store

drilling supplies. Fencing would be used to protect open trenches, sumps, or other small excavations that pose a hazard or nuisance to the public, wildlife, or livestock. Both the portable trailer and all fencing would be removed during final reclamation activities.

### **2.1.12 Monitoring**

Monitoring of drill sumps would include periodic visual inspections during drilling operations to ensure that drill cuttings are contained. Should the observed condition indicate that the sumps containment is inadequate additional sump capacity would be built and/or incorporated into the drilling fluid management system. Monitoring of drill roads and water bars would also include visual inspections, primarily after storm events. If erosion occurs, or seems likely to occur, the water bars and roads would be repaired using a Cat D7 bulldozer or equivalent.

The proposed reclamation is expected to have a duration of up to three years from the time of commencement of final reclamation and would be initiated within two years after the completion of exploration activities. Revegetation is anticipated to take up to three years after the time of seeding to achieve success. Yearly visits to the Project Area would be conducted to monitor the success of revegetation.

### **2.1.13 Environmental Protection Measures**

WLC has committed to the following environmental protection measures to prevent unnecessary and 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 other environmental protection regulations.

- Land clearing or other surface disturbance associated with the Proposed Action would be conducted outside of the avian breeding season, whenever feasible, to avoid potential destruction of active bird nests or young birds in the area. When surface disturbance must be created during the avian breeding season (April 15 through July 15), a qualified biologist would survey the area prior to land clearing activities. If active 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 entire buffer area avoided to prevent destruction or disturbance to nests until they are no longer active. The start and end dates of the seasonal restriction may be based on site-specific information, such as elevation and winter weather patterns, which affect breeding chronology.
- WLC would work with the NDOW to develop and implement a Memorandum of Understanding (MOU) for the monitoring of bighorn sheep in the vicinity of the Project Area.
- If possible, WLC would avoid exploration drilling between March 15th and May 15th to protect greater sage-grouse winter, breeding, and brood rearing habitat. However, if avoidance is not possible during this time period, WLC would avoid drilling from one hour before sunrise until noon between March 15th and May 15th. WLC would begin

drilling from sites located in the southern part of the Project Area and move northward to protect sage grouse and their leking habitat and their courting behaviors.

- Roads and drill sites would not be located within riparian scrub communities. BMPs would be followed for sediment control and would be utilized during construction, operation, and reclamation to avoid negative impacts to riparian scrub communities resulting from surface disturbance activities. BMPs would include the use of one or all of the following: sediment traps or sumps; straw bales (certified weed-free); silt fences; the distribution of clarified water from sediment traps through perforated pipes in order to minimize erosion from channeling; and the use of common, centrally located sediment sumps. If needed, the use of a sand separation system will be used in conjunction with the sediment sumps/traps so that the recirculating of drilling fluids can be maximized.
- Surface water drainage control would be accomplished by diverting precipitation event surface flows away from the exploration area, isolating runoff, and utilizing appropriate control measures.
- In the event that previously undiscovered paleontological resources are discovered in the performance of any surface disturbing activities, the item(s) or condition(s) would be left intact and immediately brought to the attention of the authorized officer of the BLM. If significant paleontological resources are found, avoidance, recordation, and/or data recovery would be required.
- WLC would avoid, or mitigate impacts to, all contributing elements of the National Register eligible Double H/Whitehorse Obsidian Procurement District (DHWOPD). All contributing elements would be avoided by a buffer zone of 100 feet unless mitigated through a data recovery plan approved by the BLM in consultation with the State Historic Preservation Office (SHPO). The BLM would provide a review of the work plan for each phase prior to WLC initiating activities under that phase to ensure the protection of all contributing elements of the DHWOPD.
- Any cultural resource discovered by the permit holder, or any person working on their behalf, during the course of activities on federal land would be immediately reported to the authorized officer by telephone, with written confirmation. The permit holder would suspend all operations in the immediate area of such discovery and protect it until an evaluation of the discovery can be made by the authorized officer. This evaluation will determine the significance of the discovery and what mitigation measures are necessary to allow activities to proceed. The holder is responsible for the cost of evaluation and mitigation. Operations may resume only upon written authorization to proceed from the authorized officer.
- Pursuant to 43 CFR 10.4(g), WLC would notify the BLM authorized officer, by telephone, and with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2). Further pursuant to 43 CFR 10.4 (c) and (d), the operator would immediately stop all activities in the vicinity of the discovery and not commence again for 30 days or when notified to proceed by the BLM authorized officer.

- Only nontoxic fluids would be used in the drilling process.
- Drill cuttings and fluids would be contained on site utilizing appropriate control measures. Sediment traps would be used as necessary and filled at the end of the drill program.
- Public safety would be maintained throughout the life of the Project. All equipment and other facilities would be maintained in a safe and orderly manner. All trenches would be fenced during the Project to prevent accidental entry by the public, wildlife, or livestock.
- Signs would be placed on SR293 northeast and southwest of the access road to the Project warning traffic of merging trucks.
- All unattended sumps would be adequately fenced to preclude access.
- Any survey monuments, witness corners, or reference monuments would be protected to the extent economically and technically feasible.
- All solid wastes would be removed from the Project Area and disposed of in a state, federal, or local designated site.
- Pursuant to 43 CFR 8365.1-1(b)(3), no sewage, petroleum products, or refuse would be dumped from any trailer or vehicle.
- All applicable state and federal fire laws and regulations would be complied with and all reasonable measures would be taken to prevent and suppress fires in the Project Area.
- Emissions of fugitive dust from disturbed surfaces would be minimized by the application of water from a water truck as a method of dust control.
- Noxious weeds would be controlled through implementation of the following BMPs: concurrent reclamation efforts; operator control; removal of invasive, nonnative, and noxious weeds on reclaimed areas; washing vehicles prior to entering the Project Area; and avoiding areas of known invasive, nonnative, and noxious weeds during periods when the weeds could be spread by vehicles.
- Activities would be restricted to frozen or dry ground conditions where feasible.

## **2.2 No Action Alternative**

Under the No Action Alternative, the BLM would not approve the Plan and would not authorize the Proposed Action. The area would remain available for other multiple use activities, as approved by the BLM. As shown in Table 2.1-1, activities on approximately five acres of authorized disturbance under WLC's Notice would continue under the No Action Alternative, which would include additional drilling activities on existing disturbance. Existing drill holes have been plugged, existing sumps have been backfilled, and reclamation earthwork has been completed. Additional exploration activities such as drilling and trenching under the Notice



would occur on the existing disturbance. Reclamation of Notice-level activities includes backfilling, recontouring, and reseeding. The Notice is due to expire in 2011 and could be extended in two-year increments.

## **2.3 Alternatives Considered but Eliminated from Detailed Study**

### **2.3.1 Cross Country/Overland Travel Alternative**

This alternative would utilize only overland or cross country travel and would not allow for construction of new roads. Utilization of cross country exclusively for the Project would eliminate much of the exploration area due to the presence of Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) which would not permit the passage of Project-related equipment. This alternative does not meet the purpose and need of the Proposed Action, which is to fully evaluate the mineral potential in the Project Area as allowed under the Mining Law because exploration of the mineralization in this area is difficult and requires numerous drill holes in order to evaluate the geologic and mineral potential.

### **2.3.2 Sagebrush Mowing for Overland Travel Alternative**

This alternative would utilize overland travel with mowing of Wyoming big sagebrush. Under this alternative sagebrush would remain in place; however, shrubs would be trimmed to a height that would allow the passage of Project-related equipment. Although the plants would be left in place, implementation of this alternative would potentially result in the destruction of the shrubs. Big sagebrush trimmed to allow passage of equipment may not recover after the winter and may eventually need to be removed. Therefore, this alternative would not provide any additional benefit to big sagebrush located in the Project Area. Roads need to be constructed in the Project Area.

### **2.3.3 Use Only Existing Roads Alternative**

Under this alternative, all exploration activities would use only existing roads and no new roads would be constructed. This alternative does not meet the purpose and need of the Proposed Action because exploration of the lithologically controlled deposits in this area is difficult and requires numerous drill holes and trenches in order to evaluate the geologic and mineral potential. An alternative that eliminates access to portions of the exploration area would deny the claimant the opportunity to fully evaluate and characterize the mineral potential. However, the Proposed Action incorporates the use of existing roads to maximum extent possible.

### **2.3.4 Helicopter Drilling Alternative**

This alternative would involve conducting exploration by using a helicopter to access the entire Project Area rather than construct roads. This would involve slinging or transporting a drill rig, fuel, supplies, laborers for pad construction, and drilling personnel via helicopter to all of the proposed drill sites. Water for drilling purposes would either need to be pumped to the site via water lines using diesel generators and pumps or by slinging water to the drill site. All personnel would be ferried to the drill site from staging areas via helicopter or they would have to hike to the drill sites from the existing roads. All drill samples would have to be removed from the drill

sites with the use of a helicopter. New surface disturbance would still result from this alternative from construction of all the drill sites, the exploration drilling that occurred on existing roads, and from the development of staging areas.

The Helicopter Drilling Alternative for the entire Project Area was considered but eliminated from full analysis for several reasons. First, helicopter drilling for the entire Project Area would not meet the purpose and need of the Proposed Action because at the present time, helicopters typically support core rigs. Most of the activities under the Proposed Action would need to be conducted by high-production reverse circulation drill rigs, which are not helicopter supported. In addition, helicopter drilling would take substantially longer to obtain the same geologic data and could also require more drill holes, resulting in more disturbance and potential impacts to natural resources. Many of the proposed drill sites have existing road access and are not located in sensitive habitats or on steep terrain that can only be accessed by helicopter. Additionally, the Project Area is located immediately adjacent to SR 293, which provides well developed access to the area and a number of roads within the Project Area have already been constructed under Notice-level activities. Therefore, helicopter drilling for all the drill sites throughout the Project Area would not provide any environmental benefit over the Proposed Action.



### **3       AFFECTED ENVIRONMENT**

#### **3.1       Introduction**

Public lands administrated by the BLM comprise the majority of land within the Project Area. Public lands within the Project Area are managed for multiple uses such as watershed, rangeland management, mineral exploration and development, recreation, and wildlife habitat. One of the objectives in the BLM's Paradise Denio MFP is to make public lands and federally-owned minerals available for exploration and development (BLM 1982).

The Project Area receives an average of nine inches of precipitation which falls mainly as winter snow and locally intense summer thunderstorms (WRCC 2008). Most precipitation in northern Nevada is from frontal storms mainly from the north during the winter months and convectional storms during summer months. Frontal storms are generally low intensity, short duration events covering large areas. Convective storms are generally high-intensity thunderstorms, and are brief and have limited aerial extent.

The Project Area is crosscut by a number of pre-existing roads. SR 293 is located in the southwestern corner of the Project Area. The area is currently used for livestock grazing, wildlife habitat, and mineral exploration. Recreational uses of the public land in the vicinity of the Project Area consist of dispersed activities such as hunting, biking, primitive camping, rock hounding, and off-road vehicle travel.

The Project Area is located in a mountain range composed of volcanic rocks between the Quinn River Valley on the east and Kings River Valley on the west. Most of the range is underlain by rhyolitic to dacitic flows and welded tuffs, but large areas of granodiorite and related intrusive rocks occur in the northwestern part of the range. The intrusive rocks are overlain by coarsely porphyritic basalt and unmapped thin-bedded sedimentary units near the border and extending into Oregon. The intrusive rocks are mainly granodiorite but their composition varies considerably, mostly in the amount of included dark minerals. It is uncertain whether this variation exists within a single intrusive body or whether several bodies of different composition are present (Wilden 1964).

The Kings Valley lithium mineralization consists of layered beds of lithium-bearing, clay-rich volcanoclastic sedimentary rocks in the McDermitt Caldera. At the present time, five areas of significant lithium mineralization have been identified: the North Lens, North Central Lens, South Lens, South Central Lens, and PCD Lens. In each of these areas, hectorite, a lithium-bearing clay mineral, occurs in thick, apparently continuous accumulations in the sedimentary rocks. The thickness of mineralization varies from less than three feet to more than 295 feet. Previous exploration suggests that the deposit averages 2,300 parts per million (ppm) lithium (Eggleston 2008).

Based on the surface geology, there could be alluvial aquifers and deeper bedrock aquifers within the vicinity of the Project Area. Natural recharge of ground water resources is by infiltration of precipitation that falls on the surface, by runoff generated from the Montana and Double H Mountains, by movement of ground water from consolidated rocks into the alluvial basin-fill deposits, and from surface water source such as streams and rivers. During precipitation and snowmelt runoff from the slopes of the Montana and Double H Mountains

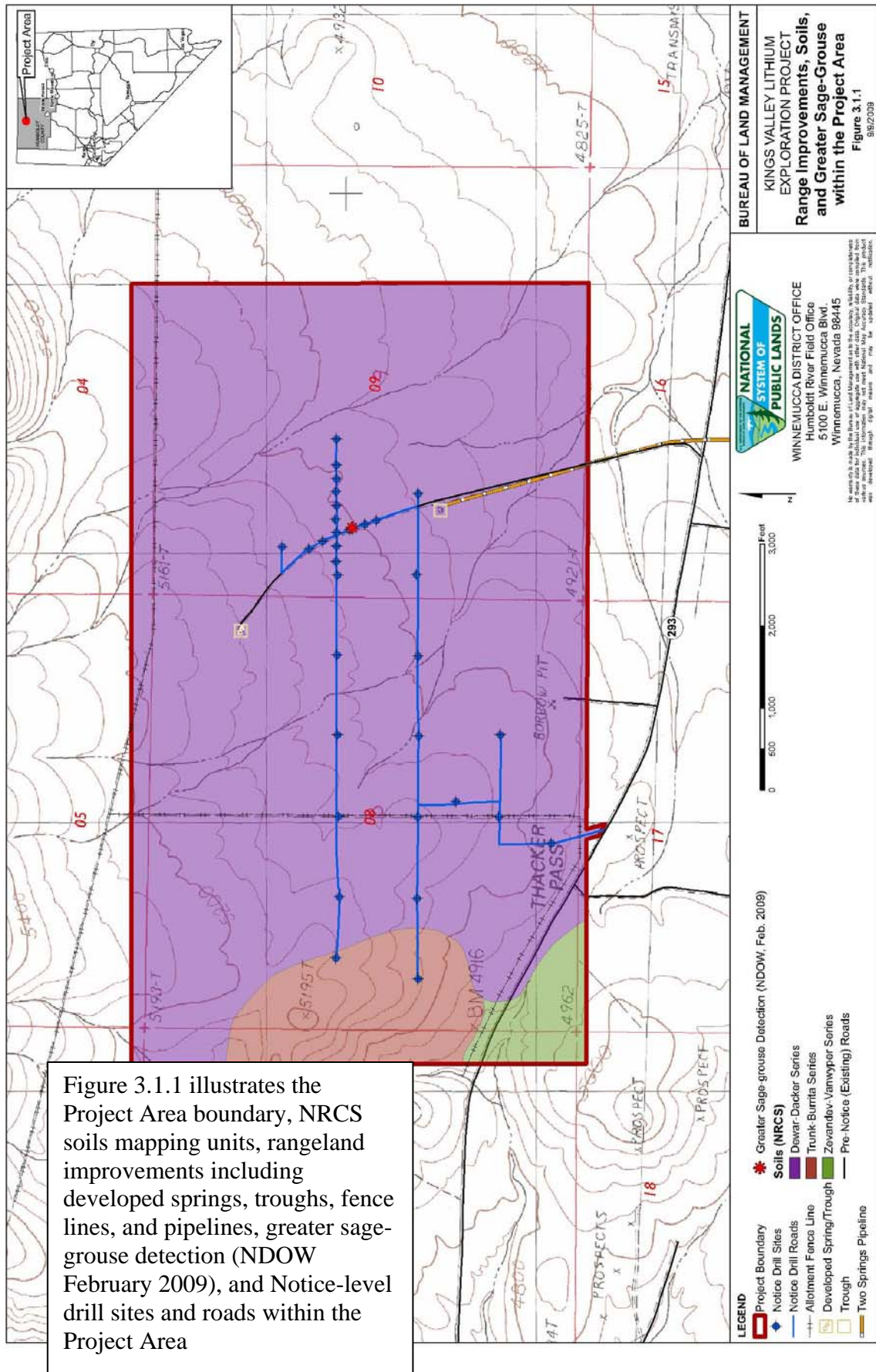
water would move across the alluvial fan where much of it infiltrates the soil, and into the alluvial aquifers within the valley. Some surface water may percolate into a deeper bedrock aquifer. The extent of ground water in the vicinity of the Project Area is unknown. As a result, the lack of surface water combined with the low annual precipitation in the Project Area and vicinity, the depth to water table (approximately 245 feet based on Notice-level exploration drilling) suggest that the ground water resources of the Project site are limited. Existing water resources in the Project Area include a spring with a trough for livestock (Figure 3.1.1).

There is one spring with an associated pond and water troughs within the Project Area. There are riparian areas present in the vicinity of this spring. Thacker Pond is located approximately 2.5 miles west of the Project Area. Riparian areas are also located west and outside of the Project Area.

A wildland fire burned the Project Area and vicinity. Following the wildland fire that occurred in 1963, the Project Area was part of a larger area seeded in the fall of 1963 (BLM Project No. N2-R-235). The Thacker Pass seeding project covered an extensive area including all of T44N, R35E, sections 9-11 and 14-17, and portions of sections 2, 3, 8, 13, and 20-24. The area was plowed with rubber-tired tractors and then seeded with a combination of crested wheatgrass (*Agropyron cristatum*) and yellow sweetclover (*Melilotus* sp.). A 1,000-acre area in the northeast portion of the plow zone (located outside of the Project Area) was seeded with Russian wildrye (*Psathyrostachys juncea*) (ASM 2008).

**Table 3.1-1: Supplemental Authorities (Critical Elements of the Human Environment)**

Element	Not Present	Present, Not Affected	Present, Potentially Affected	Reference Section
Air Quality			X	See Section 3.2.
Areas of Critical Environmental Concern (ACECs)	X			Element is not present.
Cultural Resources			X	See Section 3.3.
Environmental Justice	X			There are no environmental justice issues associated with the Project.
Flood Plains	X			Element is not present.
Invasive and Nonnative Species			X	See Section 3.4.
Migratory Birds			X	See Section 3.5.
Native American Religious Concerns			X	See Section 3.6.
Prime or Unique Farmlands	X			Element is not present.
Threatened or Endangered Species	X			Element is not present.
Wastes, Hazardous or Solid		X		Element is not present.
Water Quality (Surface and Ground)			X	Surface water see Section 3.8. Ground water not affected, see Section 3.1.
Wetlands and Riparian Zones		X		See Section 3.1 above.
Wild and Scenic Rivers	X			Element is not present.
Wilderness	X			Element is not present.



**Table 3.1-2: Additional Affected Resources**

<b>Other Resources</b>	<b>Present, Potentially Affected</b>	<b>Reference Section</b>
Paleontology	X	See Section 3.11.
Rangeland Management	X	See Section 3.12.
Recreation	X	See Section 3.13.
Social and Economic Values	X	See Section 3.14.
Soils	X	See Section 3.15.
Vegetation	X	See Section 3.16.
Visual Resources	X	See Section 3.17.
Wildlife	X	See Section 3.18.

### **3.2 Air Quality**

The Project is located within the unclassified Quinn River Valley and Kings River Valley hydrographic basins of the Black Rock Desert Region, which are considered in attainment relative to the Environmental Protection Agency (EPA) Region 9 air quality standards (EPA 2008). The existing air quality is typical of largely undeveloped regions of the western United States with limited sources of pollutants. The Project is in the north-central portion of the Great Basin, situated in the Basin and Range physiographic province. Elevations in the Project Area range from approximately 4,830 feet to 5,275 feet amsl with an average elevation of approximately 5,040 feet amsl.

The Project is located on the north side of Thacker Pass, on SR 293 as it crosses from the Quinn River Valley to the Kings River Valley between the Montana Mountains to the north and the Double H Mountains to the south. The terrain within the Project Area slopes upward toward the northwest as it approaches the Montana Mountains. The climate and vegetation in the Project Area are typical of the desert environment of the northern Basin and Range Province. The climate is arid with wide fluctuations in seasonal temperatures. Temperatures in the winter are cool with periods of cold weather and an average snowfall of 18.1 inches per year. Summer conditions are typically hot and dry. Average precipitation is approximately 8.52 inches per year, with monthly average precipitation ranging between 0.25 inch in July and 1.15 inches in December. The average maximum and minimum annual temperatures are 64.9 and 32.6 degrees Fahrenheit (°F), respectively (WRCC 2008).

### **3.3 Cultural Resources**

A Class III inventory of the entire Project Area, CR2-3003(P), was completed by ASM Affiliates in 2008. Seven previous Class III inventories, CR2-131, -215, -1443a, -1454, -1484, -2433, and -2971 also covered portions of the Project Area. These surveys were mainly linear surveys conducted in association with the modern-day SR293 alignment over Thacker Pass. In addition, Far Western Anthropological Research Group, Inc. conducted a geotechnical and hydration sampling program, CR-1443b, which included the Project Area. This data recovery program was aimed at characterizing prehistoric obsidian sources within the DHWOPD.

According to BLM Project Record #435, the majority of the Project Area was plowed for the Thacker Pass Seeding Project in 1963. Since the furrows would have been 12 to 16 inches deep, most cultural resources in the Project Area would have suffered serious disturbance. In addition, the area has been subjected to unauthorized collection of artifacts.



The Project Area is within the Thacker Pass Component of the DHWOPD which has been determined to be a discontinuous National Register eligible district by the BLM in consultation with the SHPO. Fifty-eight cultural resource sites have been recorded in the Project Area. These sites are primarily associated with obsidian procurement and reduction. Of the 58 sites in the Project Area, five (CrNV-21-1214, -21-1216, -02-8594, -02-8595, and -02-8615) have been determined to be contributing elements of the National Register eligible DHWOPD. The other 53 sites recorded in the Project Area have been determined to be non-contributing elements of the National Register eligible DHWOPD.

### **3.4 Invasive, Nonnative Species**

An "invasive species" is defined as a species that is nonnative to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health (Executive Order 13112). Invasive, nonnative species are species that are highly competitive, highly aggressive, and spread easily. They include plants designated as "noxious" and animals designated as "pests" by federal or state law.

The Nevada Department of Agriculture maintains a Nevada Noxious Weed List. The BLM defines "noxious weed" as "a plant that interferes with management objectives for a given area of land at a given point in time." The strategy for noxious weed management is to "prevent and control the spread of noxious weeds through local and regional cooperative efforts... to ensure maintenance and restoration of healthy ecosystems on BLM-managed lands." Noxious weed control would be based on a program of "...prevention, education, detection, and quick control of small infestations." Animal and plant species designated as "pests" are generally species that are injurious to agricultural and nursery interests or vectors of diseases, which may be transmissible and injurious to humans. There are no known invasive, nonnative animal species (pests) that are mandated for control in the Project Area; therefore pests are not further addressed in this EA.

No noxious weed species have been identified in the Project Area. However, hoary cress (*Cardaria draba*), a Nevada Department of Agriculture's Category C weed, has been identified as occurring south of the Project Area along the highway. Weedy, invasive species generally occupy areas of previous disturbance and barren areas and include clasping pepperweed (*Lepidium perfoliatum*) and cheatgrass (*Bromus tectorum*). Category C noxious weeds are defined by NAC 555.010 as "weeds that are generally established and generally widespread in many counties of the State. Such weeds are subject to active eradication from the premises of a dealer of nursery stock."

### **3.5 Migratory Birds**

"Migratory bird" means any bird listed in 50 CFR 10.13. All native birds commonly found in the United States, with the exception of native resident game birds, are protected under the Migratory Bird Treaty Act (MBTA). The MBTA prohibits taking of migratory birds, their parts, nests, eggs, and nestlings without a permit. 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 MOU between the BLM and the USFWS, signed January 17, 2001. The purpose of this MOU is to strengthen migratory bird conservation through enhanced collaboration between the BLM and United States Fish and Wildlife Service (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.

According to the Great Basin Bird Observatory (GBBO) survey protocol, migratory bird species associated with areas characterized by sagebrush vegetative communities may include the following: black-throated sparrow (*Amphispiza bilineata*); Brewer's blackbird (*Euphagus cyanocephalus*); Brewer's sparrow (*Spizella breweri*); canyon wren (*Catherpes mexicanus*); gray flycatcher (*Empidonax wrightii*); great horned owl (*Bubo virginianus*); green-tailed towhee (*Pipilo chlorurus*); rock wren (*Salpinctes obsoletus*); sage sparrow (*Amphispiza belli*); sage thrasher (*Oreoscoptes montanus*); western meadowlark (*Sturnella neglecta*); and vesper sparrow (*Pooecetes gramineus*) (GBBO 2003). Vesper sparrow is a BLM sensitive species.

Additionally, red-tailed hawks (*Buteo jamaicensis*) were observed in the Project Area during the November 2008 survey.

### **3.6 Native American Religious Concerns**

The BLM contacted the Fort McDermitt Paiute and Shoshone Tribe by letter on November 13, 2008, and follow-up telephone calls. In a telephone conversation with BLM archaeologist Peggy McGuckian on March 23, 2009, Fort McDermitt Tribal Chairman Dale Barr stated that the Tribe had no concerns about the Project.

### **3.7 Water Quality**

The Project is located at a ground water and surface water divide between the Kings River Valley and Quinn River Valley hydrographic basins. The eastern portion of the Project Area is located at the upper reaches of an ephemeral tributary to Pole Creek. The western portion of the Project Area is located at the upper reaches of an unnamed ephemeral tributary of the Kings River.

#### *Surface Water*

Surface water in the Project Area is very limited and generally intermittent. One spring (T44N, R35E, section 8) with associated pond and troughs is located in the northern portion of the Project Area and water from the spring is piped downhill to a trough closer to the highway for livestock. During a site visit of the Project Area in November 2008, there was no water present at either the spring or the trough below. The Project is located approximately 2.5 miles east of Thacker Pond. The source of water in Thacker Pond is from upgradient springs west of the Project Area.

### **3.8 Paleontology**

The BLM manages paleontological resources under a number of federal laws including: FLPMA Sections 310 and 302(b), which direct the BLM to manage public lands to protect the quality of scientific and other values; 43 CFR 8365.1-5, which prohibits the willful disturbance, removal, and destruction of scientific resources or natural objects; 43 CFR 3622, which regulates the amount of petrified wood that can be collected for personal, noncommercial purposes without a permit; and 43 CFR 3809.420 (b)(8), which stipulates that a mining operator "shall not knowingly disturb, alter, injure, or destroy any scientifically important paleontological remains or any historical or archaeological site, structure, building or object on Federal lands."

Informational Memorandum (IM) No. 2008-009, effective October 15, 2007, defines the BLM classification system for paleontological resources on public lands. The descriptions for the classes used in the Potential Fossil Yield Classification (PFYC) system are intended to serve as guidelines rather than strict definitions. Knowledge of the geology and the paleontological potential for individual units or preservational conditions should be considered when determining the appropriate class assignment. In addition, IM No. 2009-011, effective October 10, 2008, provides guidelines for assessing potential impacts to paleontological resources in order to determine mitigation steps for federal actions on public lands under the FLPMA and the NEPA. Together, these two IMs, with the PFYC system, provide guidance for the assessment of potential impacts to paleontological resources, field survey and monitoring procedures, and recommended mitigation measures that protect paleontological resources impacted by federal actions.

Surface disturbing activities may cause direct impacts to paleontological resources through the damage or destruction of fossils; or loss of valuable scientific information by the disturbance of the stratigraphic context in which fossils are found. Indirect impacts may be created by increased accessibility to important paleontological resources leading to looting or vandalism. Land tenure adjustments may result in the loss of significant paleontological resources to the public if paleontological resources pass from public ownership. Generally, the Project proponent is responsible for the cost of implementing mitigation measures including the costs of investigation, salvage, and curation of paleontological resources.

Under the PFYC system, the majority of the Project Area is rated moderate potential with small portions of the Project Area rated low and very low potential. There are no known paleontological sites in or near the Project Area.

### **3.9 Rangeland Management**

The Project Area is within the Kings River and Pole Creek grazing allotments within the Paradise-Denio administrative unit. The following rangeland management information has been collected from the BLM. The boundary between the two allotments is fenced (Figure 3.1.1).

The Kings River allotment consists of approximately 144,211 acres of BLM administered public lands in two areas. There is one permittee authorized to graze cattle from March 15 through November 30 each year.

The Pole Creek allotment consists of approximately 34,348 acres of BLM administered public lands. There is one permittee authorized to graze cattle in the Pole Creek Allotment from April 1 through October 31 each year. Rangeland improvements (Figure 3.1.1) within the Pole Creek Allotment include a trough fed by the spring within the Project Area and 1,803 feet of pipeline utilized to transfer water to a trough from a spring located south of the Project Area.

### **3.10 Social Values and Economics**

The Project Area is located in Humboldt County, Nevada, approximately 48 miles north of Winnemucca, Nevada, on US 95 and 20 miles west of Orovada, Nevada, on SR 293. A temporary workforce of eight employees or contractors would utilize lodging and services in Winnemucca, McDermitt, or Orovada and commute to and from the Project Area.

Humboldt County is located in north central Nevada and encompasses 9,626 square miles. The county lies along the Humboldt River and is bordered by Oregon to the north and Pershing, Elko, Lander, and Washoe Counties to the south, east, southeast, and west, respectively. Interstate-80 and the transcontinental railroad traverse Humboldt County from the east and west.

The total population of Humboldt County as of July 2008 was estimated to be 18,014, which was an increase of 28 percent since 1990 (population 13,020) (State of Nevada 2009). The population density as of 2008 was relatively low at 1.8 persons per square mile. The population in Winnemucca, the largest city and county seat, in 2008 was estimated to be 7,659 (State of Nevada 2009a). Winnemucca is home to numerous restaurants and retail outlets and provides a variety of lodging and recreational opportunities. Orovada has a gas station, mini-mart, and motel. McDermitt has a gas station, mini-mart, motel, and a restaurant.

The economy of Humboldt County is based on major industries including mining, agriculture and agricultural services, tourism, and construction. Humboldt County is home to gold and other types of mining and is the leading agricultural county in the State of Nevada with over 100,000 acres under cultivation. Tourism is also a large part of the county's economy due to gaming and outdoor recreation (i.e., hunting and fishing).

The median household income in Humboldt County in 2000 was \$52,156 annually (U.S. Census Bureau 2008). Major employment sectors are mining, agriculture, and educational, health and social services (U.S. Census Bureau 2008). The unemployment rate in Humboldt County was 8.6 percent in June 2009, which was 3.5 percent lower than the statewide unemployment rate at 12.1 percent (State of Nevada 2009b).

### **3.11 Soils**

Information regarding soils within the Project Area was obtained primarily from the United States Department of Agriculture National Resources Conservation Service (NRCS). The three soil types located in the Project Area are summarized in Table 3.10-1 and are shown on Figure 3.1.1. The majority (89.5 percent or approximately 1,084 acres) of the soils within the Project Area are made up of soil mapping unit 1312 Dewar-Dacker association. Dewar and Dacker soil series both consist of mixed alluvium and occur on the summits and backslopes of fan remnants between 5,500 and 6,100 feet amsl. These soils generally occur on slopes between zero and 15 percent and are 14 to 35 inches deep to an underlying indurated duripan horizon. Dewar-Dacker



soils are well drained. The Dewar series makes up approximately 65 percent of the association and typically consists of very fine sandy loam above gravelly clay loam. The Dacker series makes up approximately 25 percent of the association and typically consists of very fine sandy loam over silty clay loam with gravelly loam underneath. The remaining ten percent of the Dewar-Dacker association is made up of minor components. The Dewar-Dacker association is moderately susceptible to wind and water erosion (NRCS 2008).

A small section (7.5 percent of the Project Area or approximately 91 acres) of soils near the central western edge of the Project Area is made up of the Trunk-Burrita association. Trunk and Burrita soil series both derive from residuum and colluvium from mixed rocks and occur on the summits and backslopes of mountains between 4,900 and 6,400 feet amsl. These soils generally occur on slopes between four to 50 percent and are 14 to 40 inches deep to underlying bedrock. These Trunk-Burrita soils are well drained. The Trunk series makes up approximately 60 percent of the association and typically consists of very cobbly loam above gravelly clay loam. The Burrita series makes up approximately 25 percent of the association and typically consists of stony loam over very cobbly clay. The remaining 15 percent of the Trunk-Burrita association is made up of minor components. The Trunk-Burrita association is slightly susceptible to wind and water erosion (NRCS 2008).

**Table 3.10-1: Soil Types within the Project Area**

Soils in the Project Area		Susceptibility to Erosion	Number of Acres in the Project Area
NRCS Series Name	NRCS Number		
Dewar-Dacker	1312	Moderate	1,084
Trunk-Burrita	596	Slight	91
Zevandez-Vanwyper	962	Moderate	35

The Zevandez-Vanwyper association makes up only three percent (or approximately 35 acres) of the soils in the Project Area and is located in the southwest corner of the Project Area on the south side of SR 293. Zevadez soils are made up of alluvium derived from mixed rocks, loess, and volcanic ash. Zevadez soils occur on fan remnants from 4,200 to 6,400 feet amsl on slopes from four to 15 percent and are at least 60 inches deep. Vanwyper soils derive from residuum and colluvium from mixed rocks and occur on hillslopes between 15 and 50 percent. These soils are 20 to 40 inches deep above underlying lithic bedrock. Zevandez-Vanwyper soils are well drained. The Zevadez series makes up approximately 55 percent of the association and typically consists of fine sandy loam above sandy clay loam. The Vanwyper series makes up approximately 30 percent of the association and typically consists of very cobbly loam over cobbly clay. The remaining 15 percent of the Zevandez-Vanwyper association is made up of minor components. The Zevandez-Vanwyper association is moderately susceptible to wind and water erosion (NRCS 2008).

### **3.12 Special Status Species**

In addition to federally listed species, the BLM also protects special status species by policy. The list includes certain species designated by the State of Nevada, as well as species designated as “sensitive” by the Nevada BLM State Director.

The USFWS revised the federal candidate species list omitting category 1, 2, and 3 candidate species and created a single candidate list. Category 1 candidate species (C1) has been replaced

by the term candidate species. Category 2 candidate species (C2) previously referred to species for which the USFWS had some indication that listing as threatened or endangered might be warranted, but there were insufficient data available to justify a proposal to list them. Category 3 candidate species (C3) previously referred to species which once were C1 or C2, but for which subsequent data indicated that listing as threatened or endangered was not appropriate (USFWS 2009). The revised list is made up of primarily upgraded categories C1 and C2. This Notice of Review was published in the Federal Register on February 28, 1996. The Nevada BLM subsequently developed interim guidelines on March 20, 1996, to protect and conserve the majority of C2 species that were omitted from the USFWS's listing and have historically been protected as BLM Special Status Species. The BLM has incorporated the former C2 species list from the USFWS in their Nevada BLM Sensitive Species List. This list is referred to as species of special concern and is managed by the BLM to prevent future federal listing as threatened or endangered.

Results from a NNHP database search indicate that no sensitive species have been previously recorded within the Project Area; however, two observations of the Kings River pyrg (*Pyrgulopsis imperialis*), a springsnail determined to be critically imperiled by the NNHP, were recorded near Thacker Pass in a spring located north of SR 293 and in a spring south of SR 293. Both locations are west of the Project Area and east of Thacker Pond (a potential source of water for the Project). The Kings River pyrg springsnail is endemic to the State of Nevada and requires freshwater aquatic or wetland habitats for its survival (NatureServe 2008).

### **Sensitive Species**

Sensitive species are taxa that are not already included as BLM Special Status Species under (1) Federally listed, proposed, or candidate species, or (2) State of Nevada listed species. BLM policy in BLM manual 6840.06 states, "Actions authorized by the BLM shall further the conservation and/or recovery of federally listed species and conservation of Bureau sensitive species. Bureau sensitive species will be managed consistent with species and habitat management objective in land use and implementation plans to promote their conservation and to minimize the likelihood and need for listing under the Endangered Species Act of 1971, as amended under the ESA."

#### *Greater Sage-Grouse*

The Project Area is located within the Greater Sage-Grouse Lone Willow Population Management Unit (PMU), Western Region. Although no leks are located within the Project Area, three leks have been identified within two miles of the Project Area. One lek, located approximately 0.5 to 0.75 mile southwest of the Project Area in the Double H Mountains, is inactive. Two leks, located in the Montana Mountains approximately 1.5 miles north of the Project Area, are active. The northern half of the Project Area is located in greater sage-grouse nesting (March through May) and brood rearing habitat as well as winter range (October through March). Although no evidence of greater sage-grouse use was located within the Project Area during a survey conducted by Enviroscientists, Inc. on November 25, 2008; the NDOW observed greater sage-grouse in the Project Area during a site visit in the wintering period on February 19, 2009 (Figure 3.1.1). Vegetation in the Project Area was dominated by Wyoming big sagebrush, rubber rabbitbrush (*Chrysothamnus nauseosus*), and yellow rabbitbrush (*Chrysothamnus viscidiflorus*) with a canopy cover of 20 percent or less in the areas surveyed.

### *Pygmy Rabbits*

Pygmy rabbits (*Brachylagus idahoensis*), a Nevada BLM sensitive species, habitat typically consists of dense stands of big sagebrush growing in deep loose soils. The rabbits dig burrows three inches in diameter and a burrow may have three or more entrances (NatureServe 2008). Burrows are relatively simple and shallow, often no more than seven feet in length and less than four feet deep with no distinct chambers. The winter diet of pygmy rabbits is comprised of up to 99 percent sagebrush. During spring and summer, their diet may consist of roughly 51 percent sagebrush, 39 percent grasses, and ten percent forbs. The pygmy rabbit is believed to be one of only two rabbits in North America that digs its own burrows. During winter, pygmy rabbits extensively use snow burrows to access sagebrush forage, as travel corridors among their underground burrows, and possibly as thermal cover (USFWS 2008).

A survey for pygmy rabbits was conducted in the Project Area on November 25, 2008. Topographic features such as ephemeral drainages and flat to moderate slopes within the Project Area were intensively searched for pygmy rabbits and their sign. No pygmy rabbits or their sign (e.g., burrows, scat) were found. The Project Area was determined not to contain suitable habitat for pygmy rabbits.

### *Birds*

The western portion of Project Area is located within prairie falcon (*Falco mexicanus*) and golden eagle (*Aquila chrysaetos*) distributions. The known distribution of short-eared owl (*Asio flammeus*) borders the Project Area to the southeast. Potential habitat for the vesper sparrow, a BLM sensitive species, is also located within the Project Area.

## **3.13 Vegetation**

The Project is located within the Lahontan Basin Section of the Intermountain Region (Cronquist et al. 1972). Vegetation in the Project Area is dominated by Wyoming big sagebrush, rubber rabbitbrush, and yellow rabbitbrush. Crested wheatgrass, introduced during the 1963 seeding, is also present in the Project Area. Other species present in the Project Area include Indian paintbrush (*Castilleja chromosa*), steppe bluegrass (*Poa secunda*), bluebunch wheatgrass (*Agropyron spicatum*), biscuitroot (*Lomatium* sp.), lupine (*Lupinus* sp.), povertyweed (*Iva axillaris*), rockcress (*Arabis* sp.), and rough cocklebur (*Xanthium strumarium*).

## **3.14 Visual Resources**

The Project Area is located in the northern Great Basin section of the Basin and Range physiographic province. The Great Basin is defined by a rhythmic pattern of isolated mountain ranges and broad basins. Clear skies and broad, open vistas characterize this landscape. Locally, the Project Area is characterized by the gently sloping highlands of Thacker Pass sweeping up to the north toward the Montana Mountains. The Double H Mountains extend south from the Project Area, which looks east over the Quinn River Valley. Looking west, through Thacker Pass, the Project Area also provides glimpses of the Kings River Valley.

The Project Area is located in a Class IV Visual Resources Management (VRM) area. The objective of this class is to provide for management activities that allow for major modification of the existing character of the landscape. Management activities would be allowed to dominate the visual landscape and be the main focus of 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 of line, form, color, and texture (BLM 1986).

### **3.15 Wildlife**

Terrestrial wildlife resources in the Project Area are typical of the northern Great Basin. A wide variety of wildlife species common to the Great Basin ecosystem may be found in the Project Area. Common wildlife species observed in the Project Area during the wildlife survey conducted on November 25, 2008, include the following: common raven (*Corvus corax*); coyote (*Canis latrans*); black-tailed jackrabbit (*Lepus californicus*); ground squirrel (*Spermophilus* sp.); and mountain cottontail (*Sylvilagus nuttallii*). Additional species including chukar (*Alectoris chukar*), California quail (*Callipepla californica*), and a variety of small mammals and reptiles could also occur in the Project Area.

#### *Big Game*

The Project Area borders year-round mule deer (*Odocoileus hemionus*) habitat. The pronghorn antelope (*Antilocapra americana*) habitat classification for the Project Area is all months.

The Project Area is considered occupied California bighorn sheep (*Ovis canadensis californiana*) habitat. The Project is located in the vicinity of the Montana Herd and Double H Herd bighorn sheep areas. The Project Area borders the southern end of Montana Herd and is approximately 2.5 miles north of the Double H Herd.

## **4 ENVIRONMENTAL CONSEQUENCES**

The direct and indirect effects to affected resources caused by implementation of the Proposed Action and the No Action Alternative are analyzed in this chapter. Cumulative impacts are analyzed in Chapter 5.

### **4.1 Proposed Action**

#### **4.1.1 Air Quality**

The Project has the potential to disturb 75 acres. Travel on dirt access roads and drilling within the area of the Proposed Action would create fugitive dust and vehicle emissions which would have an impact on PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO, and VOC air quality standards. Fugitive dust would be caused by the operation of the following equipment: two drill rigs; one water truck; mud mixing pump; one booster truck; one pipe truck; one auxiliary air compressor; and all terrain pick-up trucks. Vehicle emissions would occur anytime the internal combustion engines on the vehicles are operating.

All required activities with surface disturbance exceeding 20 acres would be required to obtain a surface disturbance permit from the Bureau of Air Pollution Control (BAPC). One of the requirements of this permit is to prepare, submit, and implement a Dust Control Plan to control the emissions of fugitive dust at the operation. The Plan stipulates that travel on roads within the Project Area would be conducted at prudent speeds. The Dust Control Plan and speed limits are measures to minimize the potential effects of fugitive dust on air quality. Reclamation of proposed surface disturbance would gradually eliminate fugitive dust from wind erosion.

#### **4.1.2 Cultural Resources**

Under the Proposed Action, WLC would avoid, or mitigate impacts to, all contributing elements of the National Register eligible DHWOPD. All contributing elements would be avoided by a buffer zone of 100 feet unless mitigated through a data recovery plan approved by the BLM in consultation with the SHPO.

The BLM would provide a review of the work plan for each phase prior to WLC initiating activities under that phase to ensure the protection of all contributing elements of the DHWOPD (Section 2.1.13).

#### **4.1.3 Invasive, Nonnative Species**

The strategy for noxious weed management is to, “prevent and control the spread of noxious weeds through local and regional cooperative efforts...to ensure maintenance and restoration of healthy ecosystems on BLM managed lands.” Noxious weed control would be based on a program of “prevention, education, detection and rapid response (control) of small infestations.” New surface disturbance from the Proposed Action would increase the potential for and promote the spread and establishment of noxious weeds, invasive and nonnative species. These impacts would be minimal based on implementation of the environmental protection measures outlined in Section 2.1.13 and reclamation.

#### **4.1.4 Migratory Birds**

The environmental protection measure outlined in Section 2.1.13 would prevent direct impacts to migratory birds in the Project Area. Potential indirect impacts occur to migratory birds as a result of vegetation removal and activities associated with the Proposed Action. Migratory birds foraging in the Project Area during exploration activities would likely leave the immediate area, resulting in a temporary spatial redistribution of individuals or habitat-use patterns during the Project. Such redistribution would not have a long-term effect because undisturbed and suitable habitat exists around the Project Area. No long-term impacts are likely to occur because reclamation and reestablishment of vegetation would take place within three years of Project completion.

#### **4.1.5 Native American Religious Concerns**

No impacts to Native American religious concerns are anticipated.

#### **4.1.6 Water Quality**

##### *Surface Water*

The Proposed Action could result in impacts to surface water quality as a result of spills and sedimentation from surface disturbance. The potential impacts to surface water quality from spilled petroleum products and drilling fluids would be minimized by the implementation of the Spill Prevention Plan included in the Plan. In addition, all containers of hazardous substances would be labeled and handled in accordance with the NDOT and the MSHA regulations. The potential impacts to surface water quality from sedimentation would be minimized by the implementation of the environmental protection measures outlined in Section 2.1.13, including BMPs for road and drill pad construction. These BMPs would include the use of one or all of the following: sediment traps or sumps; straw bales (certified weed-free); silt fences; the distribution of clarified water from sediment traps through perforated pipes in order to minimize erosion from channeling; and the use of common, centrally located sediment sumps. Any residual impacts would be temporary, lasting only until exploration roads and drill pads are successfully reclaimed and revegetated.

#### **4.1.7 Paleontology**

Since the potential for significant paleontological resources in the Project Area ranges from very low to low, to moderate and there are no known paleontological sites there, potential for impacts to paleontological resources from the Project is minimal. If any significant paleontological resources are found during operations, impacts would be mitigated through avoidance and/or data recovery (see Section 2.1.13).

#### **4.1.8 Rangeland Management**

Potential impacts to rangeland improvements in the Project Area, including two troughs and a pipeline, could occur as a result of the Proposed Action. Disturbance as a result of the Proposed Action could impact approximately 75 acres of public lands in the Kings River and Pole Creek allotments. However, due to the small and dispersed nature of the surface disturbance resulting



from phased exploration activities (i.e., not all proposed sites would be disturbed at once) no impacts from the Proposed Action are expected on grazing animals.

To reduce potential impacts to rangeland improvements, the following mitigation is recommended.

Recommended Mitigation to Reduce Effects: Avoid rangeland improvements (Figure 3.1.1) within the Project Area in planning for the phased drilling, and should unintentional impact occur to any range improvement by WLC, WLC should repair the improvement.

#### **4.1.9 Social Values and Economics**

Approximately eight individuals would be contracted or employed to conduct the exploration activities and could be in the Project Area at the same time for the life of the Project. Personnel would potentially reside in the communities of Orovada, McDermitt, or Winnemucca, Nevada. Therefore, the socioeconomic impacts associated with the Project include, and are limited to, Humboldt County. Such personnel would be temporary and should not create a demand for additional public or private services. These individuals would support local businesses and provide income to the community through the purchase of goods and services. In addition the impacts to social values and economics from the Proposed Action would be short term (i.e., for the life of the Project).

#### **4.1.10 Soils**

The soil associations in the Project Area vary from slight to moderate for erosion hazard by water and erosion hazard by wind. Exploration activities associated with the Proposed Action on the soil series with a moderate erosion hazard for wind and water (i.e., Dewar-Dacker or Zevandez-Vanwyper) would result in greater impacts from erosion compared to disturbance on the Trunk-Burrita soil series.

Total surface disturbance associated with the Proposed Action would impact up to 75 acres of soils and could occur in any of the three soil series: Dewar-Dacker; Trunk-Burrita; or Zevandez-Vanwyper (Figure 3.1.1). It is expected that the majority of surface disturbance associated with the Project would occur on the Dewar-Dacker series since it occupies 90 percent of the Project Area.

The potential impacts to soils would be reduced by measures incorporated in the Project design including BMPs, and the concurrent reclamation of drill pads, sumps, trenches, and drill roads no longer needed for access. BMPs would include the use of one or all of the following: sediment traps or sumps; straw bales (certified weed-free); silt fences; the distribution of clarified water from sediment traps through perforated pipes in order to minimize erosion from channeling; and the use of common, centrally located sediment sumps. Growth media (e.g., topsoil and alluvium) would be salvaged and placed in a separate stockpile from the remainder of the excavated material. The growth media would be redistributed after the trench has been refilled to enhance revegetation and reduce the potential for erosion. Following successful reclamation, which would include regrading, ripping, and revegetation of disturbed areas, soil loss due to the Proposed Action would be temporary and minimal.

#### **4.1.11 Special Status Species**

The Proposed Action would result in surface disturbance of approximately 75 acres of vegetation. The disturbance would be created incrementally and dispersed throughout the Project Area. Reclamation would begin upon completion of exploration activities using a BLM approved seed mix. In addition, the disturbance would be mostly linear (roads) or patchy (drill pads) in form, and therefore highly likely to be recolonized by surrounding vegetation.

Although the NNHP database search did not identify any special status species within the Project Area, two observations of the Kings River pyrg springsnail were recorded near Thacker Pass in a spring located north of SR 293 and in a spring south of SR 293. Both locations are west of the Project Area and east of Thacker Pond (a potential source of water for the Project). Thacker Pond is located downgradient of the springs where the Kings River pyrg springsnails were observed; therefore, no impacts to the Kings River pyrg springsnail are expected as a result of the Project.

#### **Sensitive Species**

Greater sage-grouse were observed by the NDOW in the Project Area on February 19, 2009. Potential impacts to foraging greater sage-grouse could occur as a result of habitat (i.e., big sagebrush) removal and activities associated with the Proposed Action. These impacts could result in the redistribution of greater sage-grouse outside the Project Area and vicinity. Additional habitat for foraging greater sage-grouse is located in the vicinity surrounding the Project Area. There are no leks located within the Project Area and the nearest leks are located north of the Project Area. As outlined in the Proposed Action (Section 2.1.13), WLC would implement an environmental protection measure to avoid drilling between March 15th and May 15th to reduce potential impacts to lekking and breeding greater sage-grouse.

The Project Area and immediate vicinity are located within the known distribution of several BLM sensitive migratory birds, including prairie falcon, golden eagle, short-eared owl, and vesper sparrow. Potential indirect impacts could occur to foraging sensitive migratory bird species in the Project Area as a result of vegetation removal and activities associated with the Proposed Action. Sensitive migratory birds foraging in the Project Area during exploration activities would likely leave the immediate area, resulting in a temporary spatial redistribution of individuals or habitat-use patterns during the Project. Such redistribution would not have a long-term effect because undisturbed and suitable habitat exists around the Project Area. No long-term impacts are likely to occur because reclamation and reestablishment of vegetation would take place within three years of Project completion.

#### **4.1.12 Vegetation**

The Proposed Action would result in surface disturbance of approximately 75 acres of vegetation, including Wyoming big sagebrush, rubber rabbitbrush, yellow rabbitbrush, and crested wheatgrass. The disturbance would be created incrementally and dispersed throughout the big sagebrush vegetation community in the Project Area. Reclamation would begin upon completion of exploration activities using a BLM approved seed mix. In addition, the disturbance would be mostly linear (roads) or patchy (drill pads) in form, and therefore highly



likely to be recolonized by surrounding vegetation. Revegetation following the Proposed Action would minimize impacts to vegetation.

#### **4.1.13 Visual Resources**

The Proposed Action would result in short-term visual impacts principally affecting the visual elements of line and color. Horizontal and shallow diagonal lines from drill roads would cause moderate, temporary line contrasts with the natural landscape. Disturbance of vegetation would cause moderate, temporary color contrasts. With successful reclamation of exploration roads and revegetation, long-term visual impacts would be minimized. The effects of the Proposed Action on visual resources would be consistent with BLM prescribed Class IV VRM objectives.

#### **4.1.14 Wildlife**

Direct impacts to wildlife would consist of temporary habitat loss and disturbance from human activity and noise. Approximately 75 acres of existing wildlife habitat would be temporarily impacted by exploration activities over a five-year period, with the actual length of time based on exploration results, and reclamation following exploration including revegetation.

Although minimal impacts are expected, wildlife, especially individual small mammals displaced by Project-related disturbance might perish. Construction of roads and drill pads and the operation of drilling equipment could disturb wildlife due to the presence of humans and by creating noise and dust. Wildlife foraging activities within the Project Area could continue to be dispersed because two drill rigs and their associated support equipment would be operating at one time, allowing wildlife to move around and between Project activities. Reclamation and reestablishment of vegetation would take place within one to three years of Project completion. Therefore, no long-term impacts to wildlife habitat are likely to occur and the Proposed Action would have minimal direct impacts on wildlife species.

Indirect impacts to wildlife would occur as a result of short-term temporary loss of vegetation as a result of Project-related surface disturbance. Potential impacts to habitat would be minimized following reclamation and revegetation.

#### *Big Game*

Any disturbance to mule deer, pronghorn antelope, and bighorn sheep would likely be limited to temporary auditory and/or visual perturbation of individuals in or near the Project Area. Individual mule deer, pronghorn antelope, and bighorn sheep foraging in the Project Area during exploration activities would likely leave the immediate area, resulting in a temporary spatial redistribution of individuals or habitat-use patterns during the Project. Such redistribution would not have a long-term effect because undisturbed and suitable habitat exists around the Project Area.

No long-term impacts are likely to occur because reclamation and reestablishment of vegetation would take place within three years of Project completion. The quality, quantity, and distribution of suitable mule deer and pronghorn antelope habitat are not expected to be greatly altered by Project implementation. Potential impacts to bighorn sheep movement between the Montana Mountains the Double H Mountains could occur as a result of the Proposed Action. These

impacts could result in disruption or alteration of bighorn sheep movement. A minor increase in traffic would occur; however, the likelihood of deer/antelope/sheep-vehicle collision is considered low. As outlined in Section 2.1.13, WLC would work with the NDOW to develop and implement a MOU for the monitoring of bighorn sheep in the vicinity of the Project Area.

## **4.2 No Action Alternative**

Under the No Action Alternative, none of the impacts associated with the Proposed Action would occur. However, ongoing mineral exploration activities currently permitted in the Project Area, which are similar to those described for the Proposed Action, and traffic on SR 293 would result in impacts similar to those associated with the Proposed Action.

### **4.2.1 Air Quality**

The No Action Alternative could include redistributing up to five acres on public lands. Under the No Action Alternative, travel on dirt roads, drilling, and excavation activities would create fugitive dust and vehicle emissions, causing a minor impact to air resources. Fugitive dust would be controlled by minimizing surface disturbance. Speed limits on access roads would be observed, and travel on roads within the Project Area. Impacts would be controlled by using water trucks for dust suppression. Reclamation of surface disturbance would gradually eliminate fugitive dust from wind erosion. Impacts to air quality as a result of the No Action Alternative would be similar, but proportionally less than the Proposed Action.

### **4.2.2 Cultural Resources**

No impacts to cultural resources are anticipated because all impacts to contributing elements of the National Register eligible DHWOPD and other National Register sites would be avoided by Notice-level activities.

### **4.2.3 Invasive, Nonnative Species**

The No Action Alternative could include redistributing up to five acres on public lands. Under the No Action Alternative, currently permitted surface disturbance in the Project Area would continue to occur and may result in impacts from invasive, nonnative species. Reclamation of surface disturbance, including reseeding, would gradually decrease potential impacts from invasive, nonnative species. Impacts to invasive, nonnative species as a result of the No Action Alternative would be similar, but proportionally less than the Proposed Action.

### **4.2.4 Migratory Birds**

The No Action Alternative could include redistributing up to five acres on public lands. Under the No Action Alternative, currently permitted surface disturbance in the Project Area would continue to occur, which would result in the temporary loss of five acres of migratory bird habitat. Reclamation of surface disturbance would gradually eliminate potential impacts to migratory birds. Impacts to migratory birds as a result of the No Action Alternative would be similar, but proportionally less than the Proposed Action.

#### **4.2.5 Native American Religious Concerns**

Under the No Action Alternative, there would be no impacts to Native American religious concerns.

#### **4.2.6 Water Quality**

##### *Surface Water*

Potential impacts to surface water quality as a result of this alternative would be similar to the Proposed Action and could include spills and sedimentation from surface disturbance under the Notice. Reclamation of surface disturbance would gradually eliminate sedimentation. Impacts to water quality as a result of the No Action Alternative would be similar, but proportionally less than the Proposed Action.

#### **4.2.7 Paleontology**

Although the majority of the Project Area is rated under the PFYC system as having moderate potential, with portions of the Project Area rated as having low to very low potential, there are no known paleontological sites in or near the Project Area. Therefore, the No Action Alternative is not likely to impact paleontological resources.

#### **4.2.8 Rangeland Management**

The impacts to rangeland management under the No Action Alternative would be minimal due to the small and dispersed nature of the permitted surface disturbance and this impact is similar to but less than the Proposed Action. Notice-level disturbance does not overlap with rangeland improvements, including trough and associated pipeline, located in the Project Area. Therefore, no impacts to rangeland improvements are expected as a result of the No Action Alternative.

#### **4.2.9 Social Values and Economics**

Under the No Action Alternative, the presence of up to eight individuals associated with the Project would potentially cause temporary minor impacts to the communities of Orovada and/or Winnemucca, Nevada. These impacts could include increased traffic and increased business for motels, restaurants, gas stations and grocery stores. Impacts associated with the No Action Alternative would be similar, but proportionally less than the Proposed Action.

#### **4.2.10 Soils**

Under the No Action Alternative, the construction and maintenance of access roads and drill pads would impact five acres of soils. Approximately 0.2 acre of Notice-level surface disturbance would occur in the Trunk-Burrita soil association and 4.8 acres of Notice-level surface disturbance would occur in the Dewar-Dacker soil association. Trunk-Burrita and Dewar-Dacker soils are associated with a slight and moderate susceptibility to erosion, respectively. The majority of Notice-level surface disturbance would occur in the Dewar-Dacker association, which has a moderate level of susceptibility to erosion. The potential for wind and water erosion of disturbed soils would be increased until reclamation was successfully

completed. The potential impacts to soils would be reduced by measures incorporated in the Project design, including the use of waterbars and other BMPs, and the concurrent reclamation of drill pads, sumps, trenches, and drill roads no longer needed for access. BMPs would include the use of one or all of the following: sediment traps or sumps; straw bales (certified weed-free); silt fences; the distribution of clarified water from sediment traps through perforated pipes in order to minimize erosion from channeling; and the use of common, centrally located sediment sumps. Impacts associated with the No Action Alternative would be similar to but less than the Proposed Action.

#### **4.2.11 Special Status Species**

Impacts to special status species habitat would be caused by the permitted exploration activities on five acres of public land within the Project Area. Impacts to special status species habitat under the No Action Alternative would be similar to but less than the Proposed Action.

#### **4.2.12 Vegetation**

The No Action Alternative could include redistributing up to five acres on public lands. Under the No Action Alternative, currently permitted surface disturbance in the Project Area would continue to occur, which would result in the temporary loss of five acres of vegetation. Reclamation of surface disturbance including reseeding would minimize impacts to vegetation. Under the No Action Alternative, there would be no impacts to wetlands or riparian zones or special status plant species.

#### **4.2.13 Visual Resources**

The No Action Alternative could include redistributing up to five acres on public lands. Under the Proposed Action currently permitted surface disturbance in the Project Area would continue to occur. The impacts to visual resources would be consistent with BLM prescribed Class IV VRM objectives under the No Action Alternative.

#### **4.2.14 Wildlife**

The No Action Alternative could include redistributing up to five acres on public lands. Under the Proposed Action currently permitted surface disturbance in the Project Area would continue to occur, which would result in the temporary loss of five acres of wildlife habitat. Reclamation of surface disturbance would gradually eliminate impacts to wildlife. Impacts to wildlife as a result of the No Action Alternative would be similar, but proportionally less than the Proposed Action.

## 5 CUMULATIVE IMPACTS

A cumulative impact is defined under federal regulations as follows:

"...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

As required under the NEPA and the regulations implementing NEPA, this chapter addresses those cumulative effects on the environmental resources in the Cumulative Effects Study Areas (CESAs) which could result from the implementation of the Proposed Action and No Action Alternative. The extent of the CESA will vary with each resource, based on the geographic or biologic limits of that resource. As a result, the list of projects considered under the cumulative analysis may vary according to the resource being considered. In addition, the length of time for cumulative effects analysis will vary according to the duration of impacts from the Proposed Action on the particular resource.

### 5.1 Assumptions for Analysis

Direct and indirect consequences of the Proposed Action were evaluated previously in Chapter 4 for the various environmental resources. Analyzed in this chapter are those resources from Chapter 4 that have the potential to be incrementally impacted by the Proposed Action within the identified CESAs. Based on the preceding analysis in Chapter 4, no cumulative impacts are expected for the following resources: cultural resources; social and economic values; Native American religious concerns; paleontology; rangeland management; and visual resources.

#### *Description of CESA Boundaries*

The geographical areas considered for the analysis of cumulative effects vary in size and shape to reflect each evaluated environmental resource and the potential area of impact.

The Biology CESA (504,498 acres) was developed to assess potential cumulative impacts to special status species, migratory birds, and wildlife. To analyze the cumulative impacts to bighorn sheep and greater sage grouse, the Biology CESA includes portions of occupied NDOW-identified bighorn sheep habitat and the Lone Willow Greater Sage-Grouse PMU (Figure 5.1.1).

The Hydrology CESA is identified as the subwatersheds that overlap the Project Area and encompasses 26,260 acres (Figure 5.1.1). Initially, the Hydrologic Unit Code (HUC) 5 watersheds were evaluated for their applicability. Based on this review the ID team determined that specific subwatersheds were the appropriate CESA boundary for this analysis. The Hydrology CESA was developed to address potential cumulative impacts to soils, vegetation, water quality, air quality, and noxious weeds. Table 5.1-1 outlines the CESA area by each resource.







**Table 5.1-1: Cumulative Effects Study Areas**

Resource	Cumulative Effects Study Area	CESA Name	CESA Size (acres)
Migratory Birds, Special Status Species, Wildlife	Greater sage-grouse Lone Willow PMU and portions of the occupied bighorn sheep habitat	Biology CESA	506,498
Soils, Vegetation, Water Quality, Air Quality, Invasive, Nonnative Species	Subwatersheds that overlap with the Project Area	Hydrology CESA	26,260

## 5.2 Past and Present Actions

Past and present actions in the Hydrology CESA include the following: livestock grazing; rangeland improvements; ROWs; land exchange; fuels treatments; wildland fire; transportation networks; and dispersed recreation.

Past and present actions in the Biology CESAs include the following: exploration (approximately 25 acres of mineral exploration surface disturbance); livestock grazing; rangeland improvements; ROWs; land exchange; fuels treatments; wildland fire; transportation networks; and dispersed recreation.

### *Mineral Exploration*

Previous mineral exploration for lithium was conducted by Chevron in the Project Area from 1979 until 1987. This disturbance included exploration drill holes and access roads.

Excluding the Proposed Action, there is no current disturbance associated with mineral exploration in the Hydrology CESA.

Approximately 25 acres of surface disturbance associated with mineral exploration are located within the Biology CESA. Additionally, there are approximately 40 acres associated with a community materials site in the Biology CESA and approximately 15 acres of surface disturbance authorized for two projects associated with mineral commodities in the Biology CESA.

### *Livestock Grazing and Rangeland Improvements*

Three allotments are located in the Hydrology CESA. These allotments are also administered by the BLM HRFO and include the Crowley Creek, Kings River, and Pole Creek Allotments. Details for the Kings River and Pole Creek Allotments are included in Section 3.9. The Crowley Creek Allotment consists of 49,983 acres of public land.

In addition to the three aforementioned allotments, 15 additional allotments are located in the Biology CESA. The size of each allotment is included below in Table 5.2-2.

**Table 5.2-2: Allotments Located within the Biology CESA**

Allotment Name	Managed By (BLM Field Office)	Size (acres)
Bilk Creek	Humboldt River	101,953
Coyote Hills	Humboldt River	42,000
Double H	Humboldt River	55,343
Grassy Basin	Burns	7,411
Happy Creek	Humboldt River	97,679
Horse Creek	Humboldt River	39,376
Jordan Meadow	Humboldt River	103,050
Kings River	Humboldt River	152,738
Little Horse Creek	Humboldt River	3,556
McDermitt Creek	Vale	3,080
Sand Hills	Burns	12,614
Sod House	Humboldt River	24,395
Washburn	Humboldt River	31,105
Wilder-Quinn	Humboldt River	226,953
Zimmerman	Vale	32,730

Rangeland improvements in the Hydrology CESA include approximately 204,955 feet of fencing and exclosures, and 53,942 feet of pipeline.

Rangeland improvements in the Biology CESA include approximately 2,172,780 feet of fencing and exclosures (including the Lyle Spring livestock grazing exclosure), 10,977 feet associated with stream improvement, and 290,667 feet associated with pipelines.

#### *Wildland Fires and Fuels Treatments*

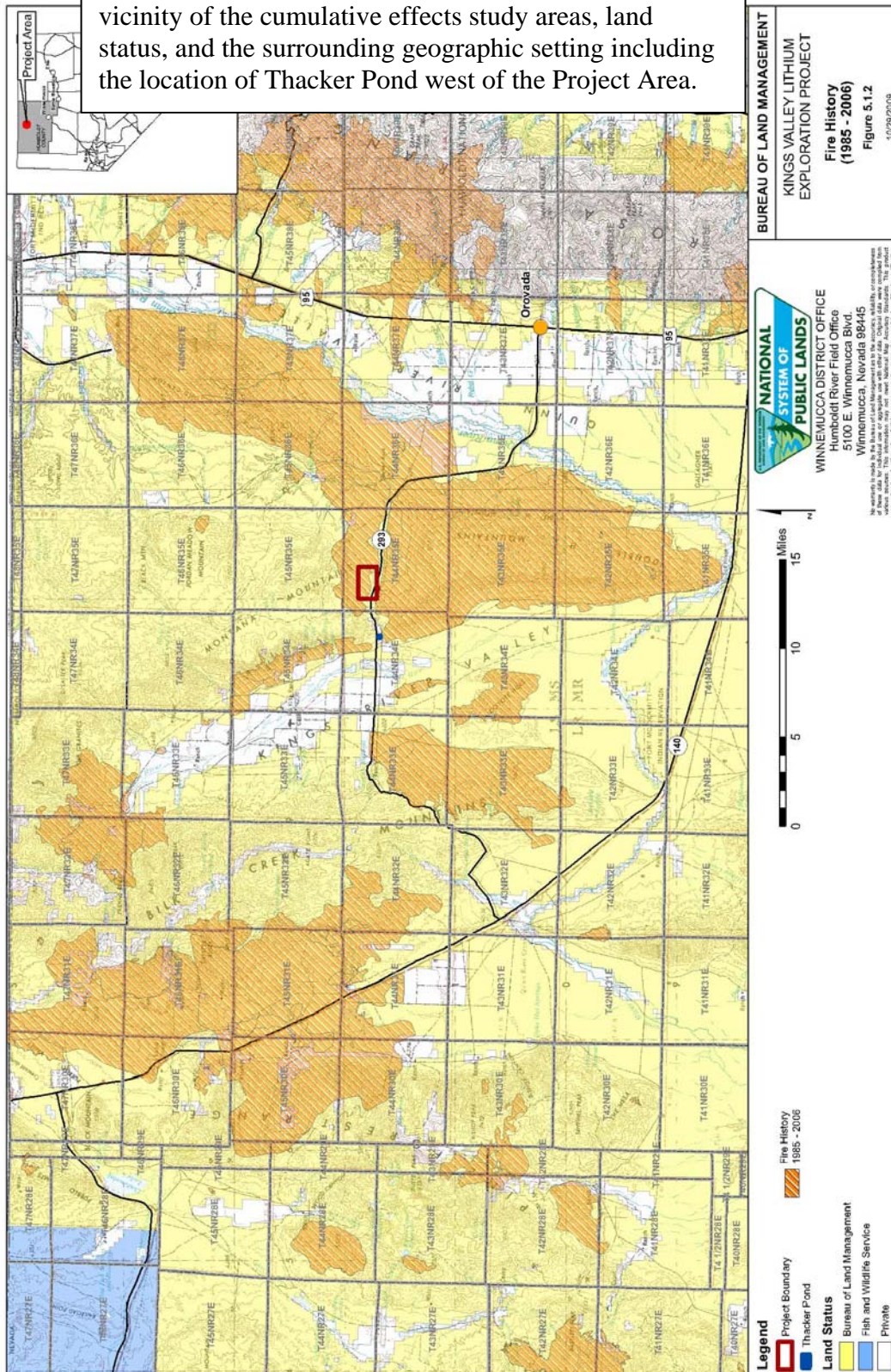
Wildland fires burned approximately 19,073 acres within the Hydrology CESA and 174,194 acres within the Biology CESA between 1985 and 2006 (Figure 5.1.2).

As described at the beginning of Chapter 3, a wildland fire burned the Project Area and vicinity. Following the wildland fire, the entire Project Area was seeded in the fall of 1963. The Thacker Pass seeding project covered an extensive area including T44N, R35E, sections 9-11 and 14-17, and portions of sections 2, 3, 8, 13, and 20-24. The area was plowed and then seeded with a combination of crested wheatgrass and yellow sweetclover. A 1,000-acre area in the northeast portion of the plow zone (located outside of the Project Area) was seeded with Russian wildrye (ASM 2008).

Fuels treatments in the CESAs are shown on Figure 5.1.1. Fuels treatments within the Hydrology CESA include 176 acres associated with the Montana and Thacker mowings.

Fuels treatments within the Biology CESA include the following: 1,063 acres associated with the Lone Willow Spike treatments; 224 acres associated with the Long Canyon, Middle, and Montana mowings; 33 acres associated with the Double H herbicide treatment; and 11 acres associated with the Double H sagebrush plantings.

Figure 5.1.2 illustrates the Project Area boundary, fire history from 1986 to 2006 in the Project Area and in the vicinity of the cumulative effects study areas, land status, and the surrounding geographic setting including the location of Thacker Pond west of the Project Area.





### *Transportation Networks*

Approximately 8.4 and 18.1 miles of SR 293 are located within the Hydrology and Biology CESAs, respectively. There are also approximately 35 miles of existing roads in the Hydrology CESA and approximately 524 miles of existing roads in the Biology CESA. These roads are primarily located within the valleys of the CESAs. Road maintenance, including grading, graveling, and paving occurs on all of these roads.

### *ROWs*

Three ROWs, a federal highway, telephone line, and a power transmission line, are located within the Hydrology CESA. Twenty-three ROWs are located within the Biology CESA and include 11 communication ROWs, five associated with transmission lines, one associated with roads, one associated with a pipeline, two associated with other federal facility, one associated with federal highway, and two associated with telephone lines.

### *Land Exchange, Acquisitions, and Land Sales*

One land sale consisting of 5,725 acres is located in the Hydrology and Biology CESAs. Ten land acquisitions totaling approximately 22 acres and one additional land sale for approximately ten acres are located in the Biology CESA.

### *Recreation*

Dispersed recreation occurs throughout the CESAs; however, there are no data on the level of use.

## **5.3 Reasonably Foreseeable Future Actions**

Activities/events that would continue to occur in the Hydrology CESA include the following: livestock grazing; fuels treatments; wildland fire; transportation networks; ROWs; and dispersed recreation.

Activities/events that would continue to occur in the Biology CESA include the following: livestock grazing; fuels treatments; wildland fire; transportation networks; ROWs; dispersed recreation; and rangeland improvements.

RFFAs in the Hydrology CESA include mineral exploration. RFFAs in the Biology CESA would include mineral exploration and rangeland improvements.

### *Mineral Exploration*

Mineral exploration and aggregate activities are expected to continue based on current supply and demand of minerals and commodities. Data for the acres of RFFA surface disturbance associated with mineral exploration in the CESAs are based on the LR2000 database (BLM 2009).

In the Hydrology CESA, one mineral exploration project is proposed for a total of five acres of surface disturbance.

In the Biology CESA, Western Energy Development Corporation has proposed continued uranium exploration located approximately ten miles northwest of the Project Area. The proposed project would disturb a maximum of 250 acres in phases over a ten-year period and include disturbance from drill sites, sumps, constructed roads, and overland travel. Additionally, one project related to mineral exploration for approximately five acres is pending in the Biology CESA.

#### *Livestock Grazing and Rangeland Improvements*

The Fourth of July Meadow grazing enclosure is a pending project located in the Biology CESA and would consist of approximately two miles of fence and encompass approximately 160 acres.

#### *Continuation of Past and Present Actions*

Livestock grazing and road maintenance are expected to continue at their current levels. Recreation in the planning area is expected to increase an average of five percent per year (BLM 2005).

### **5.4 Cumulative Impacts for the Proposed Action**

#### **5.4.1 Air Quality**

The CESA for air quality is the Hydrology CESA, which covers 26,260 acres.

*Past and Present Actions:* Present actions within the Hydrology CESA that are likely to be contributing to air quality impacts include wildland fire, dispersed recreation, minerals exploration, and transportation networks. These activities are principally contributing point source particulate matter emissions and fugitive dust to the air quality impacts; however, products of combustion are also emitted.

*RFFAs:* RFFAs within the Hydrology CESA that may contribute to impacts to air quality include dispersed recreation, mineral exploration, transportation, and wildland fires. These impacts result in impacts to air quality from the emissions of point source particulate matter, fugitive dust, and the products of combustion.

*Cumulative Impacts:* Cumulative impacts to air quality within the Hydrology CESA would result from the past and present actions and RFFAs when combined with the Proposed Action. The incremental contribution of the Proposed Action's particulate and combustion emissions and fugitive dust would be relatively small and the cumulative emissions are generally dispersed. Stationary sources would be regulated by the BAPC under individual permits to ensure that impacts would be reduced to levels that are consistent with the ambient air quality standards. The Dust Control Plan for the Project and speed limits are measures that would minimize the potential effects of fugitive dust on air quality. Reclamation of Project-related proposed surface disturbance would gradually eliminate fugitive dust from wind erosion.

### 5.4.2 Invasive, Nonnative Species

The CESA for invasive, nonnative species is the Hydrology CESA, which covers 26,260 acres.

*Past and Present Actions:* Past and present actions with impacts created by invasive, nonnative species (noxious weeds) have included livestock grazing, rangeland improvements, ROWs, land exchange, fuels treatments, wildland fire, transportation networks, and dispersed recreation. Surveys did not locate noxious weeds in the Project Area; however, invasive, nonnative species (i.e., cheatgrass and clasping pepperweed) are present in the Hydrology CESA.

*RFFAs:* Potential impacts from invasive, nonnative species as a result of mineral exploration, livestock grazing, fuels treatments, transportation networks, ROWs, dispersed recreation, or loss of vegetation associated with wildland fires could occur, and result in continued potential of invasive, nonnative species infestations.

*Cumulative Impacts:* Cumulatively, the past, present, and RFFAs in combination with the Proposed Action would result in potential impacts from invasive, nonnative species that would be limited to infestations following removal or disturbance of vegetation. Wildland fires have impacted a large portion of the Hydrology CESA (Figure 5.1.1). The Proposed Action (75 acres) would impact 0.3 percent of the CESA (26,260 acres). The past and present actions and RFFAs would impact an undetermined percentage of the Hydrology CESA that is not readily quantifiable. The potential impacts from the Proposed Action would be minimized due to the implementation of environmental protection measures outlined in Section 2.1.13 including the following BMPs: concurrent reclamation efforts; operator control; removal of invasive, nonnative species, and noxious weeds on reclaimed areas; washing of vehicles prior to entering the Project Area; and avoiding areas of invasive, nonnative species and noxious weeds during periods when the weeds could be spread by vehicles. As a result, a minimal incremental impact from invasive, nonnative species in the Hydrology CESA is expected.

### 5.4.3 Migratory Birds, Special Status Species, and Wildlife

The CESA for migratory birds, special status species, and general wildlife is the Biology CESA, which includes 506,498 acres.

*Past and Present Actions:* Past and present actions that are likely to have impacts to the habitat for bighorn sheep and greater sage-grouse, as well as migratory birds and other wildlife include mineral exploration, livestock grazing, ROWs, land exchange, fuels treatments, wildland fire, transportation networks, and dispersed recreation. These activities are likely to have impacts to migratory birds, special status species, and wildlife habitat, or result in direct impacts to individuals in travel routes. Approximately 174,194 acres within the Biology CESA have been disturbed by wildland fires between 1985 and 2006, which is approximately 34 percent of the CESA.

According to the Lone Willow PMU Risk Factor Assessment and Proposed Action Plan, the most significant risk factor to greater sage-grouse located in the PMU is the large acreage of sagebrush habitat lost to wildland fire and converted to invasive species such as cheatgrass. The most immediate threat to this population is the loss of sagebrush habitat comprising the bulk of the remaining winter habitat for greater sage-grouse. Within the boundary of the Lone Willow



PMU, approximately 32 percent (of 152,565 acres) of the sagebrush habitat types have burned since 1985. The most heavily impacted sites have been the winter, nesting, and early brood use areas. Post fire rehabilitation success, in low elevation Wyoming sagebrush community types, has been very low (NDOW 2004).

Past and present minerals surface disturbance in the Biology CESA totals approximately 25 acres (or approximately 0.01 percent of the CESA). There are no data on the number of acres reclaimed. State and federal regulations require reclamation; therefore, it is reasonable to assume that some areas have been reclaimed and some areas have become naturally stabilized, and/or naturally revegetated over time. Improvements to habitat associated with exclosures have occurred in the Biology CESA.

Within the Biology CESA there are portions of 19 allotments. Grazing has modified vegetation, and thus modified the migratory bird, special status species, and wildlife habitat throughout the CESA.

*RFFAs:* Potential impacts to migratory birds, special status species, and wildlife from mineral exploration, livestock grazing, fuels treatments, transportation networks, ROWs, dispersed recreation, or loss of habitat associated with potential wildland fires and fuels treatments could occur. In addition, noise could affect migratory birds, special status species, and wildlife. Improvements to habitat are expected on approximately 160 acres as a result of the BLM exclosure planned at the Fourth of July Meadow.

Grazing uses within the Biology CESA would have varying effects on migratory birds, special status species, and wildlife habitats based on the grazing system in each allotment.

Impacts to migratory birds, special status species, and wildlife from the Project would be limited to removal of vegetation, alteration of habitat (75 acres), noise associated with exploration, and vehicular collisions. The Proposed Action (75 acres) would impact 0.01 percent of the CESA (506,498 acres). These impacts would be localized. Based on the above analysis and findings from Sections 4.1.4, 4.1.11, and 4.1.14, incremental impacts to migratory birds, special status species, and wildlife as a result of the Proposed Action when added to the past and present actions and RFFAs are expected to be minimal.

#### **5.4.4 Water Quality**

The CESA for water is the Hydrology CESA (26,260 acres).

*Past and Present Actions:* Past actions that are likely to have impacted surface water would have included livestock grazing, rangeland improvements, ROWs, land exchange, fuels treatments, wildland fire, transportation networks, and dispersed recreation. Although a large portion of the Hydrology CESA has burned, there are no specific data that quantify the amount of sedimentation and potential impacts to surface water quality. Vegetation removed by wildland fires would no longer function to stabilize topsoil and reduce sedimentation caused by runoff during storm events. A total of 6.58 acres of disturbance are approved for mineral activities in the Hydrology CESA. Reclamation would be required when this disturbance is completed, thereby limiting the amount of sedimentation generated by this disturbance.

*RFFAs:* Potential impacts to surface water quality could result from mineral exploration, livestock grazing, fuels treatments, wildland fire, transportation networks, ROWs, and dispersed recreation. There are no specific data on the amount of sedimentation that could result from these activities. However, the mining activities would be required to have spill prevention plans, handle hazardous substances in accordance with NDOT and MSHA, adhere to NAC 534.4369 and 534.4371, and utilize BMPs, thus minimizing impacts to water quality. BMPs would include the use of one or all of the following: sediment traps or sumps; straw bales (certified weed-free); silt fences; the distribution of clarified water from sediment traps through perforated pipes in order to minimize erosion from channeling; and the use of common, centrally located sediment sumps.

The Proposed Action (75 acres) would impact 0.3 percent of the CESA (26,260 acres). Surface disturbance would increase the potential for erosion and sedimentation in the surface water system. As a result, a minimal incremental impact to surface water quality in the Hydrology CESA is expected.

#### **5.4.5 Soils**

The CESA for soils is the Hydrology CESA (26,260 acres).

*Past and Present Actions:* Past actions that could have impacted soils would have included livestock grazing, rangeland improvements, ROWs, land exchange, fuels treatments, transportation networks, and dispersed recreation that disturbed or impacted soils, or that increased erosion or sedimentation. Soil disturbance may also have been associated with wildland fires; however, fire rehabilitation and natural revegetation have occurred, stabilizing soil loss. There are no specific data that quantify soil loss in the Hydrology CESA.

*RFFAs:* Potential impacts to soils from livestock grazing, fuels treatments, transportation networks, ROWs, dispersed recreation, or loss of vegetative cover associated with potential wildland fires could occur.

The Proposed Action (75 acres) would impact 0.3 percent of the CESA (26,260 acres). The potential impacts from the Proposed Action would be minimized due to the implementation of environmental protection measures outlined in Section 2.1.13 and concurrent reclamation. As a result, a minimal incremental impact to soils in the Hydrology CESA is expected.

#### **5.4.6 Vegetation**

The CESA for vegetation is the Hydrology CESA (26,260 acres).

*Past and Present Actions:* Past and present actions that could impact vegetation would include livestock grazing, rangeland improvements, ROWs, transportation networks, and dispersed recreation that utilized, impacted or reduced vegetation. Vegetation loss was also associated with wildland fire and fuels treatments.

Within the Hydrology CESA there are portions of three allotments. The level of use in these allotments has resulted in an ongoing change or shift in the vegetation throughout the CESA.

*RFFAs*: Potential impacts from mineral exploration, livestock grazing, fuels treatments, transportation networks, ROWs, dispersed recreation, or loss of vegetation associated with wildland fires could occur.

The Proposed Action (75 acres) would impact 0.3 percent of the CESA (26,260 acres). The potential impacts to vegetation from the Proposed Action would be minimized due to concurrent reclamation. As a result, a minimal incremental impact to vegetation in the Hydrology CESA is expected.

## **5.5 Cumulative Impacts from the No Action Alternative**

### **5.5.1 Air Quality**

Cumulative impacts to air resources within the CESA would result from the present and *RFFAs* when combined with this alternative. However, the incremental contribution of this alternative is less than the Proposed Action and would be relatively small and the cumulative emissions are generally dispersed and the stationary sources would be regulated by the BAPC to ensure that impacts would be reduced to levels that are consistent with the ambient air quality standards.

### **5.5.2 Invasive, Nonnative Species**

Cumulatively, the past, present, and *RFFAs* would result in potential impacts from noxious weeds that would be limited to infestations following removal of vegetation. These impacts would be localized. Therefore, impacts from invasive, nonnative species as a result of this alternative would be less than the Proposed Action and in combination with past and present actions and *RFFAs* would be minimized.

### **5.5.3 Migratory Birds, Special Status Species, and Wildlife**

Cumulatively, the past, present, and *RFFAs* would result in potential impacts to migratory birds, special status species, and wildlife and their habitat. These impacts would be localized and current projects would include revegetation in order to restore habitat. Due to the small impact within the Biology CESA, the impacts to migratory birds, special status species, and wildlife or their habitat from this alternative in combination with past and present actions and *RFFAs* would be minimal.

### **5.5.4 Water Quality**

Cumulatively, the past, present, and *RFFAs* would result in impacts to surface water resources. Due to the very small impact within the CESA, the impacts to surface water quality from this alternative in combination with past and present actions and *RFFAs* would be minimal.

#### **5.5.5 Soils**

Cumulatively, the past, present, and RFFAs would result in the displacement of soils and could result in increased erosion by wind and water. These impacts would be localized. Therefore, impacts to soils as a result of this alternative would be less than the Proposed Action and in combination with past and present actions and RFFAs would be minimized.

#### **5.5.6 Vegetation**

Cumulatively, the past, present, and RFFAs would result in removal of vegetation. These impacts would be localized. Therefore, impacts to vegetation as a result of this alternative would be less than the Proposed Action and in combination with past and present actions and RFFAs would be minimized.

## 6 MITIGATION AND MONITORING

### 6.1 Proposed Action

The following mitigation measures are recommended.

#### *Rangeland Management*

Recommended Mitigation to Reduce Effects: Avoid rangeland improvements (Figure 3.1.1) within the Project Area in planning for the phased drilling, and should unintentional impact occur to any range improvement by WLC, WLC should repair the improvement.

Key environmental protection measures committed to by WLC in Section 2.1.13 are reiterated below.

#### *Migratory Birds*

Land clearing or other surface disturbance associated with the Proposed Action would be conducted outside of the avian breeding season, whenever feasible, to avoid potential destruction of active bird nests or young birds in the area. When surface disturbance must be created during the avian breeding season (April 15 through July 15), a qualified biologist would survey the area prior to land clearing activities. If active 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 entire buffer area avoided to prevent destruction or disturbance to nests until they are no longer active. The start and end dates of the seasonal restriction may be based on site-specific information, such as elevation and winter weather patterns, which affect breeding chronology.

#### *Wildlife*

WLC would work with the NDOW to develop and implement a Memorandum of Understanding (MOU) for the monitoring of bighorn sheep in the vicinity of the Project Area.

WLC would avoid exploration drilling between March 15th and May 15th to protect greater sage-grouse winter, breeding, and brood rearing habitat. However, if avoidance is not possible during this time period, WLC would avoid drilling from one hour before sunrise until noon between March 15th and May 15th. WLC would begin drilling from sites located in the southern part of the Project Area and move northward to protect sage grouse and their leking habitat and their courting behaviors.

#### *Vegetation, Soils, Water Quality*

Roads and drill sites would not be located within riparian scrub communities. BMPs would be followed for sediment control and would be utilized during construction, operation, and reclamation to avoid negative impacts to riparian scrub communities

resulting from surface disturbance activities. BMPs would include the use of one or all of the following: sediment traps or sumps; straw bales (certified weed-free); silt fences; the distribution of clarified water from sediment traps through perforated pipes in order to minimize erosion from channeling; and the use of common, centrally located sediment sumps. If needed, the use of a sand separation system will be used in conjunction with the sediment sumps/traps so that the recirculating of drilling fluids can be maximized.

Surface water drainage control would be accomplished by diverting precipitation event surface flows away from the exploration area, isolating runoff, and utilizing appropriate control measures.

Only nontoxic fluids would be used in the drilling process.

Drill cuttings and fluids would be contained on site utilizing appropriate control measures. Sediment traps would be used as necessary and filled at the end of the drill program.

All solid wastes would be removed from the Project Area and disposed of in a state, federal, or local designated area.

Pursuant to 43 CFR 8365.1-1(b)(3), no sewage, petroleum products, or refuse would be dumped from any trailer or vehicle.

Activities would be restricted to frozen or dry ground conditions where feasible.

#### *Paleontology*

In the event that previously undiscovered paleontological resources are discovered in the performance of any surface disturbing activities, the item(s) or condition(s) would be left intact and immediately brought to the attention of the authorized officer of the BLM. If significant paleontological resources are found, avoidance, recordation, and/or data recovery would be required.

#### *Cultural Resources*

WLC would avoid, or mitigate impacts to, all contributing elements of the National Register eligible DHWOPD. All contributing elements would be avoided by a buffer zone of 100 feet unless mitigated through a data recovery plan approved by the BLM in consultation with the SHPO. The BLM would provide a review of the work plan for each phase prior to WLC initiating activities under that phase to ensure the protection of all contributing elements of the DHWOPD.

Any cultural resource discovered by the permit holder, or any person working on their behalf, during the course of activities on federal land would be immediately reported to the authorized officer by telephone, with written confirmation. The permit holder would suspend all operations in the immediate area of such discovery and protect it until an evaluation of the discovery can be made by the authorized officer. This evaluation will determine the significance of the discovery and what mitigation measures are necessary to allow activities to proceed. The holder is responsible for the cost of evaluation and



mitigation. Operations may resume only upon written authorization to proceed from the authorized officer.

Pursuant to 43 CFR 10.4(g), WLC would notify the BLM authorized officer, by telephone, and with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2). Further pursuant to 43 CFR 10.4 (c) and (d), the operator would immediately stop all activities in the vicinity of the discovery and not commence again for 30 days or when notified to proceed by the BLM authorized officer.

#### *Public Safety*

Public safety would be maintained throughout the life of the Project. All equipment and other facilities would be maintained in a safe and orderly manner. All trenches would be fenced during the Project to prevent accidental entry by the public, wildlife, or livestock.

Signs would be placed on SR293 northwest and southeast of the access road to the Project warning traffic of merging trucks.

All unattended sumps would be adequately fenced to preclude access.

Any survey monuments, witness corners, or reference monuments would be protected to the extent economically and technically feasible.

All applicable state and federal fire laws and regulations would be complied with and all reasonable measures would be taken to prevent and suppress fires in the Project Area.

#### *Air Quality*

Emissions of fugitive dust from disturbed surfaces would be minimized by the application of water from a water truck as a method of dust control.

#### *Invasive, Nonnative Species*

Noxious weeds would be controlled through implementation of the following BMPs: concurrent reclamation efforts; operator control; removal of invasive, nonnative, and noxious weeds on reclaimed areas; washing vehicles prior to entering the Project Area; and avoiding areas of known invasive, nonnative, and noxious weeds during periods when the weeds could be spread by vehicles.

Monitoring measures are included as part of the Proposed Action (Section 2.1.12). No additional monitoring is proposed.

## **6.2      No Action Alternative**

There are no mitigation measures or monitoring proposed as part of the No Action Alternative.

## 7 LIST OF PREPARERS

### Bureau of Land Management

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Peggy McGuckian	Cultural Resources, Native American Consultation, Paleontology
Mike Zielinski	Soil Resources, Air Quality, Wetland and Riparian Zones, Vegetation
Ken Detweiler	Wildlife, Special Status Species, Migratory Birds, Threatened and Endangered Species
Lynn Ricci	NEPA Compliance
Ron Pearson	Rangeland Management
Joey Carmosino	Visual Resource Management, Recreation
Jeanette Black	Water Quality

### Nevada Department of Wildlife, Cooperating Agency

Ed Partee	Wildlife
Kenny Pirkle	Wildlife

### Enviroscientists, Inc.

Opal Adams	Project Manager, Visual Resources, Paleontology
Michele Lefebvre	Assistant Project Manager, Air Quality, Cultural Resources, Invasive, Nonnative Species, Migratory Birds, Native American Religious Concerns, Water Quality, Rangeland Management, Soils, Special Status Species, Vegetation, Wildlife
Chet Van Dellen	GIS Data Management/Figure Production
Sara Thorne	Wildlife
Jennifer Thies	Social and Economic Values

## **8 CONSULTATION AND COORDINATION**

### *Tribal Consultation*

The BLM contacted the Fort McDermitt Paiute and Shoshone Tribe by letter on November 13, 2008, and follow-up telephone calls. In a telephone conversation with BLM archaeologist Peggy McGuckian on March 23, 2009, Fort McDermitt Tribal Chairman Dale Barr stated that the Tribe had no concerns about the Project.

## **9 PUBLIC INVOLVEMENT**

A scoping letter was posted on the BLM's website and sent to potentially interested parties by the BLM on December 8, 2008, and two responses were received. Public notification of the availability of the Preliminary EA was provided on October 30, 2009, and the Preliminary EA was posted on the BLM's website on November 3, 2009. At the conclusion of the comment period, two comment letters were received. Based on review of public comments, no changes to the conclusions made in the EA were warranted. However, after reviewing the comments, two additional alternatives were considered in Section 2.3 - *Alternatives Considered but Eliminated from Detailed Study* of the EA. These addressed use of existing roads only, and using helicopters for drilling access.

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