PRELIMINARY ENVIRONMENTAL ASSESSMENT

DOI-BLM-NV-W010-2010-0008-EA

Kings Valley Uranium Exploration Project

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BLM

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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--10/25+1792

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WESTERN ENERGY DEVELOPMENT CORPORATION
KINGS VALLEY URANIUM EXPLORATION PROJECT
HUMBOLDT COUNTY, NEVADA
ENVIRONMENTAL ASSESSMENT

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ACRONYMS

amsl	above mean sea level
BAPC	Bureau of Air Pollution Control
BLM	Bureau of Land Management
BMPs	Best Management Practices
BMRR	Bureau of Mining Regulation and Reclamation
CESAs	Cumulative Effects Study Areas
CFR	Code of Federal Regulations
CO	carbon monoxide
EA	Environmental Assessment
EPA	Environmental Protection Agency
ESA	Endangered Species Act
˚F	degrees Fahrenheit
HRFO	Humboldt River Field Office
HUC	Hydrologic Unit Code
ID	interdisciplinary
FLPMA	Federal Land Policy and Management Act
MBTA	Migratory Bird Treaty Act
MDB&M	Mount Diablo Base and Meridian
MFP	Management Framework Plan
MOU	Memorandum of Understanding
MSHA	Mine Safety and Health Administration
NAC	Nevada Administrative Code
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
NDWR	Nevada Division of Water Resources
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
NNHP	Nevada Natural Heritage Program
NO_X	nitrogen oxide
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes
NSPL	National System of Public Lands
PFYC	Potential Fossil Yield Classification
Plan	Plan of Operations
PM_{10}	Particulate matter less than 10 micrometers
PMU	Population Management Unit
RFFAs	reasonably foreseeable future actions
ROW	right-of-way
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SR	State Route
US 95	United States Highway
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOC	volatile organic compounds
VRM	Visual Resource Management
WEDC	Western Energy Development Corporation

WESTERN ENERGY DEVELOPMENT CORPORATION
KINGS VALLEY URANIUM EXPLORATION PROJECT
ENVIRONMENTAL ASSESSMENT

1 INTRODUCTION

1.1 Introduction

The Kings Valley Exploration Project (Project) is located on the western slope of the Montana Mountains, overlooking the Kings River Valley, in Humboldt County, Nevada. The Project encompasses approximately 1,383 acres and ranges in elevation from 4,465 feet to 6,425 feet above mean sea level (amsl), with an average elevation of approximately 5,450 feet amsl. The Project would consist of approximately 250 acres of mineral exploration surface disturbance located on public lands administered by the Bureau of Land Management (BLM) Winnemucca District Office, Humboldt River Field Office (HRFO). The Project is located within portions of Township 45 North, Range 34 East (T45N, R34E), sections 4, 9, and 16, and T46N, R34E, sections 22, 27, 28, 33, and 34, Mount Diablo Base and Meridian (MDB&M) (Project Area) approximately 63 miles north-northwest of Winnemucca, Nevada (Figure 1.1.1).

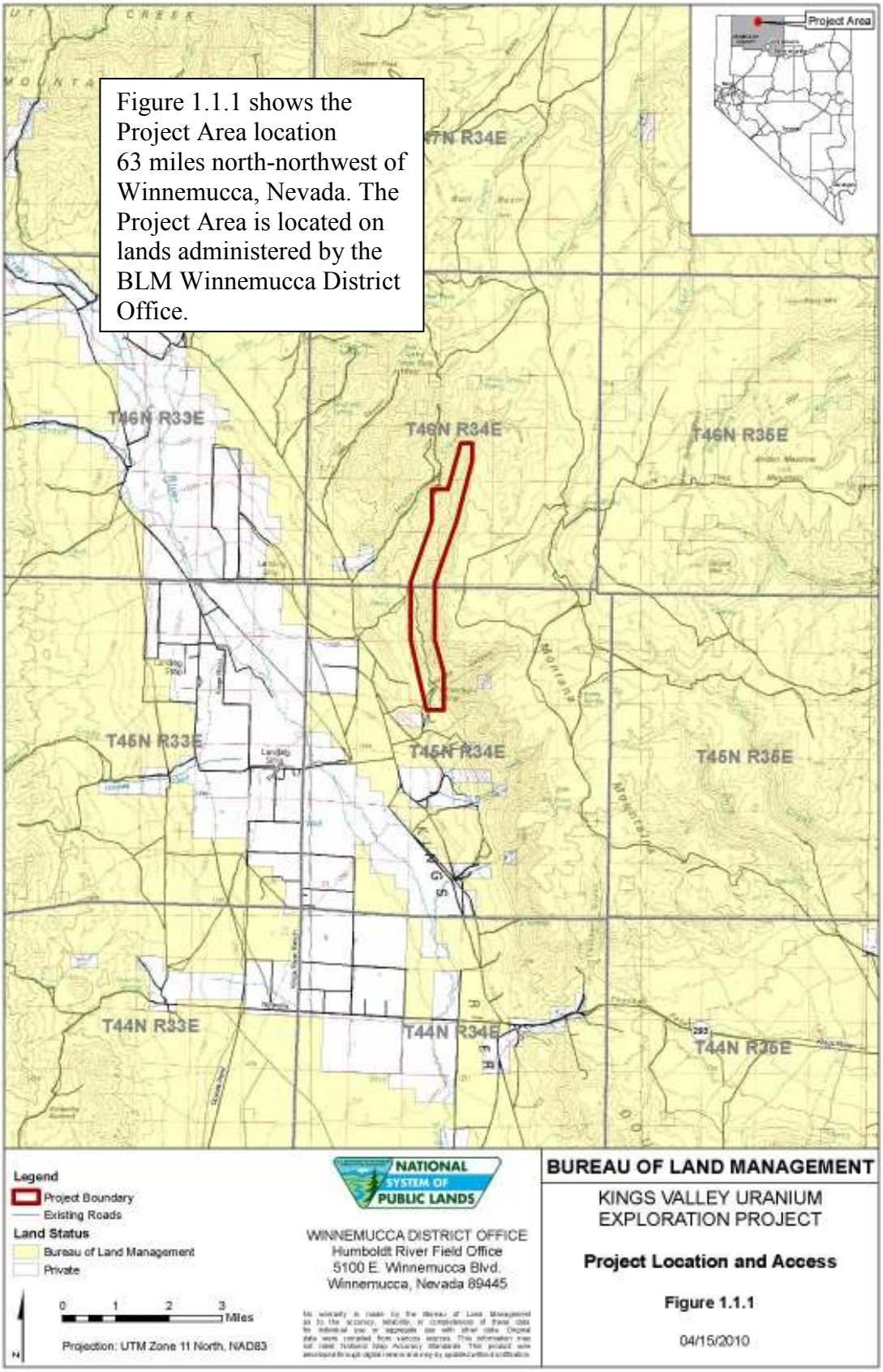
Western Energy Development Corporation (WEDC) conducted mineral exploration activities within the Project Area under two separate notices: the North Zone (#N81441) and the Moonlight/South Zone (#N82249) (Notices). Under the Notices, WEDC created approximately nine acres of surface disturbance associated with drill site and road construction. WEDC proposes to expand exploration activities to include an additional 241 acres of surface disturbance. Therefore, in accordance with 43 Code of Federal Regulations (CFR) 3809 and Nevada Administrative Code (NAC) 519A, WEDC submitted a Plan of Operations/Permit for Reclamation (Plan) (Record No. N85094/Reclamation Permit No. ____) to the BLM and Nevada Division of Environmental Protection (NDEP) Bureau of Mining Regulation and Reclamation (BMRR) in July 2008. Expanded exploration activities would include drill site and sump construction, road construction, monitoring wells, and maintaining existing roads (Proposed Action) within the 1,383-acre Project Area. This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act of 1969 (NEPA) as amended, to analyze the effects of the Proposed Action.

1.2 Purpose and Need

The purpose of this action is to provide WEDC the opportunity to conduct exploration including drill site and sump construction, road construction, and monitoring wells, necessary to verify mineral resources and establish existing conditions.

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.

Figure 1.1.1: Project Area



1.3 Land Use Conformance Statement

The Proposed Action described in this EA is 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."

1.4 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 zoned as M3 - open space, which is consistent with the Proposed Action.

1.5 Issues

A scoping process was conducted in order to determine the scope of this environmental analysis. The scoping process began with an interdisciplinary team meeting held at the BLM office in Winnemucca on October 28, 2008. At this meeting, the BLM and cooperating agency (NDOW in this case) staff defined issues and made initial determination of what needed to be analyzed in this EA (see Chapter 3 Affected resources), data needs, possible alternatives, and public outreach needs.

This was followed by external scoping where other agencies, organizations, tribes, local governments, and the public are provided opportunity to provide feedback regarding issues, concerns, data needs and such things as potential alternatives. This assists the BLM in refining issues, identifying any new issues, coordination needs, possible alternatives and so forth.

A letter and map were sent to a mailing list of potentially interested public on February 27, 2009. The scoping letter and map were also posted on the BLM's Winnemucca District NEPA web page.

We heard from the Division of State Lands, the Division of Water Resources, the Commission on Minerals, the State Historic Preservation Office, the U.S. Fish and Wildlife Service and an organization called the Center for Biological Diversity. We also heard from the Nevada Department of Wildlife through its role as Cooperating Agency in the development of this environmental assessment and tribal governments through government-to-government consultation. Government-to-government consultation was conducted with affected tribal governments (see EA sections on Native American Religious Concerns and Chapter 8 Consultation and Coordination).

Based on internal and external scoping, issues raised and identified included the following:

Impacts to Wildlife specifically:

- Occupied California bighorn sheep and habitat?
- Greater sage-grouse and habitat?
- Greater Sage-Grouse Lone Willow Population Management Unit?

Pronghorn antelope and habitat?
Year-round mule deer and habitat?
Pygmy rabbits and habitat?
Bats and habitat?
Chukar and habitat?
Quail and habitat?
Raptors and habitat?
Migratory birds and habitat?

Suitability of soil as growth medium?

Where would work force come from?

What water sources would be used?

From where would gravel be obtained?

What are the access routes currently through project area and how would these be impacted?
Would dispersed recreationists involved in hunting, fishing, rock collecting and other recreation activities still be able to access through project area?

Public perception regarding Uranium projects (world-wide) due to radiation's impact on human health and the environment.

Impacts to cultural resources?

Impacts on Visual Resources?
What mitigation will be implemented to reduce impacts to dark sky (mitigation language recommended through scoping)
Cumulative visual impacts?

Impacts on Air Quality?

Impacts to wetlands and stream habitats? (issue raised but no impacts related to these items)

Impacts to range improvements? (issue raised but no impacts related to range improvements)

Impacts on Native American Religious Concerns?
Sacred Sites/Traditional Cultural Properties?

Would there be impacts to Moonlight Mine?

What is the Paleontological Sensitivity?

What would the cumulative impacts on affected resources be from implementing the proposed action?

2 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Proposed Action

The Proposed Action consists of expanding the Notice-level exploration activities within the 1,383-acre Project Area. Expanded exploration activities would include the construction of exploration roads, drill sites, and sumps, monitoring wells, and the maintenance of existing roads. The Proposed Action would increase surface disturbance of nine acres to a total of 250 acres. Figures 2.1.1, 2.1.2, 2.1.3, and 2.1.4 show the Notice-level disturbance. The proposed disturbance would occur in phases over a ten-year period. All Project activities would be located on National System of Public Lands (NSPL) administered by the BLM. The Notice-level and proposed surface disturbance is outlined by type of activity in Table 2.1-1.

Table 2.1-1: Acreage of Notice-level and Proposed Project Disturbance

Exploration Activity	Notice-level Disturbance Acres	Proposed		Total Acres of Disturbance
		Proposed Phase I Acres	Subsequent Phases Acres	
Constructed Roads	4.28	0.72	146.97	151.97
Pre-1981 Roads Requiring Revegetation and berm smoothing	0.00	13.70	13.36	27.06
Constructed Drill Sites (includes sumps and spoil piles)	4.50	21.23	40.02	65.75
Monitoring Wells	0.00	0.00	5.00	5.00
Overland Roads	0.06	0.00	0.00	0.06
Overland Drill Sites (includes sumps and spoil piles)	0.16	0.00	0.00	0.16
Total Project-related Disturbance Acres	**9.00**	**35.65**	**205.35**	**250.00**
		241.00		

As outlined in Table 2.1-1, WEDC has projected that the total surface disturbance would equal 250 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, WEDC would conduct the exploration work in phases. The projected first phase of exploration activities equals 35.65 acres. An additional 205.35 acres of disturbance would occur in subsequent phases over the remainder of the proposed ten-year period. 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 WEDC would provide documentation under that phase (i.e., work plans and maps) for the areas of planned exploration prior to commencing

Figure 2.1.1: Project Area Overview

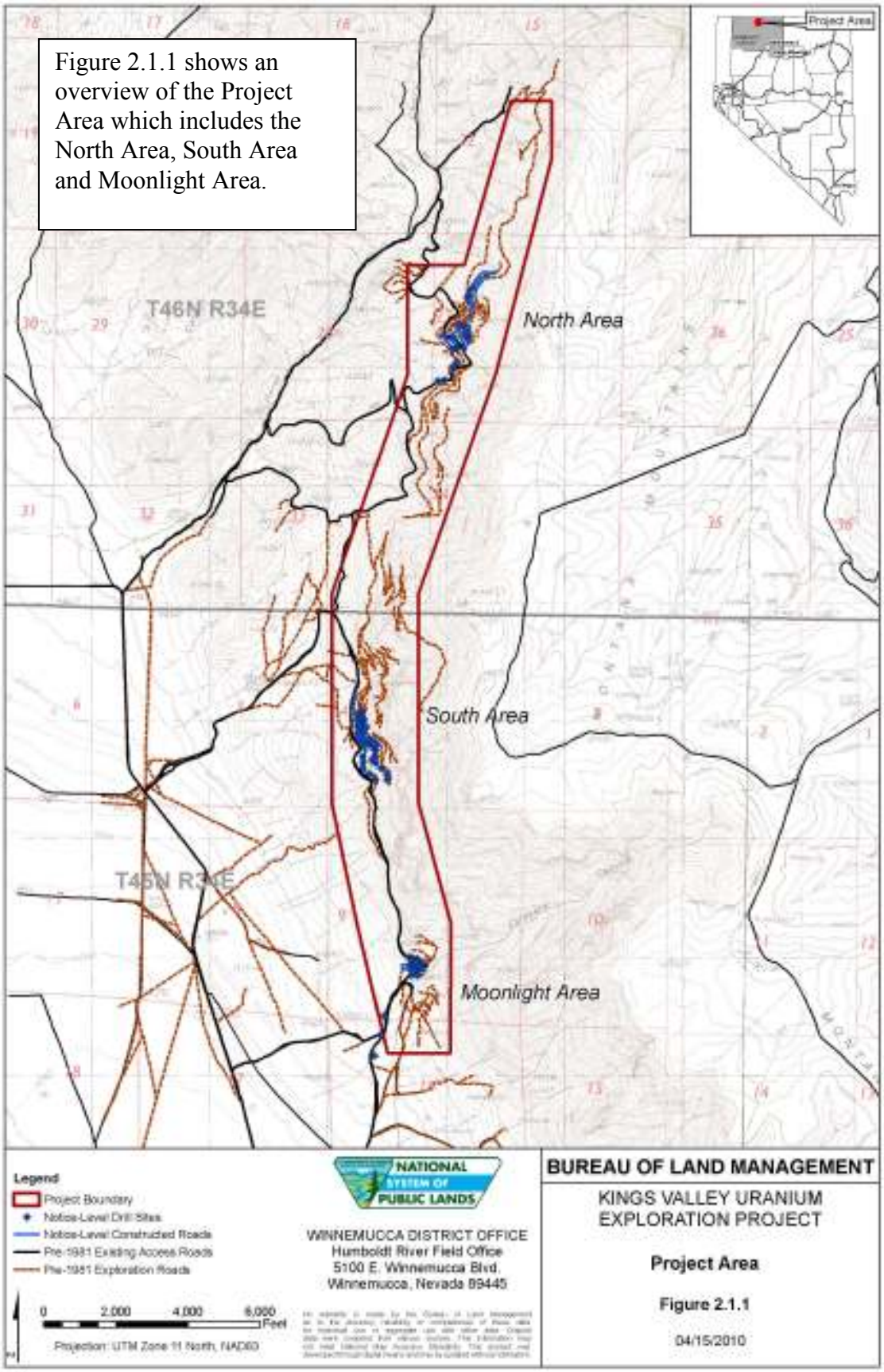


Figure 2.1.2: Project - North Area

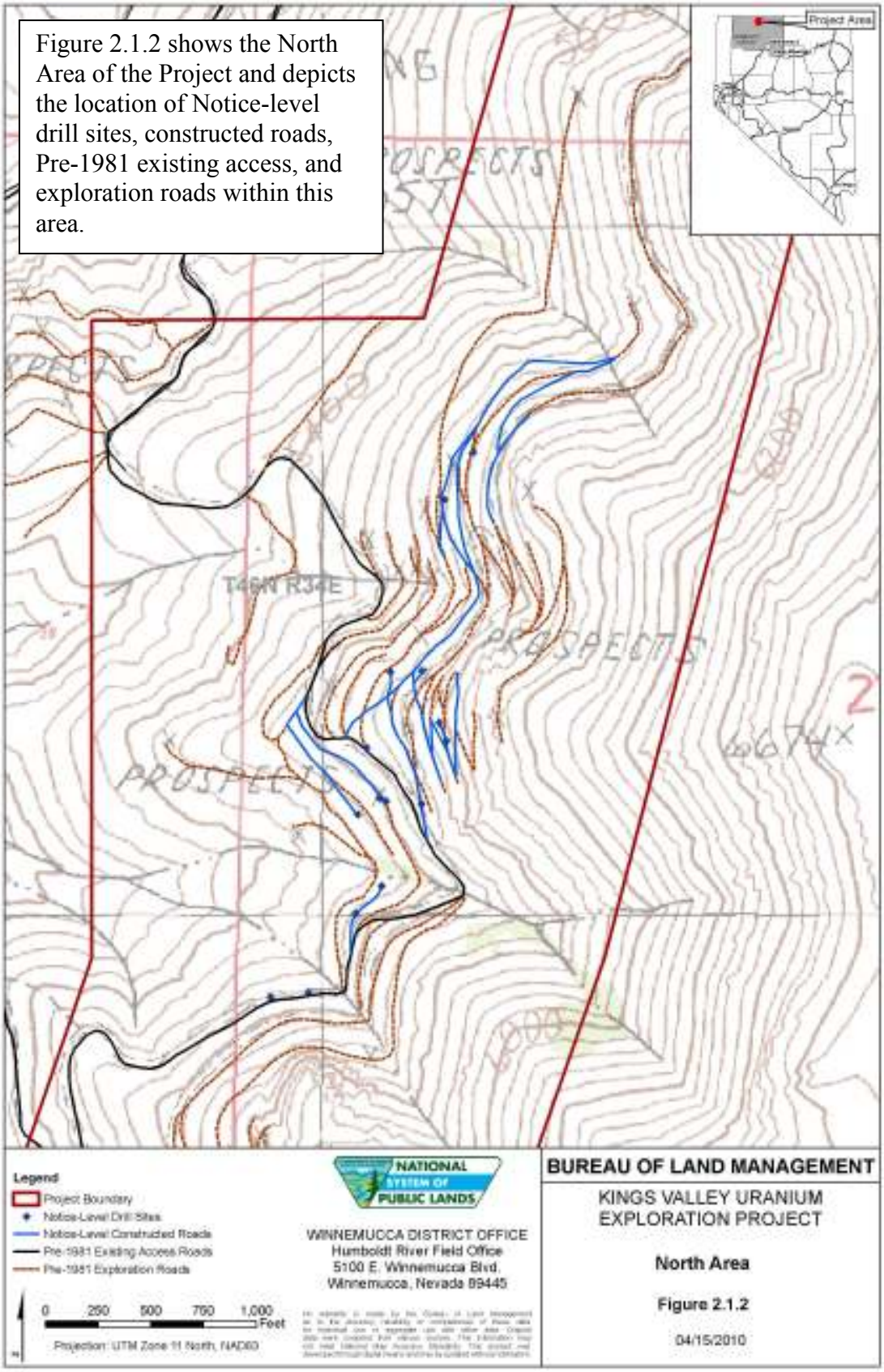


Figure 2.1.3: Project - South Area

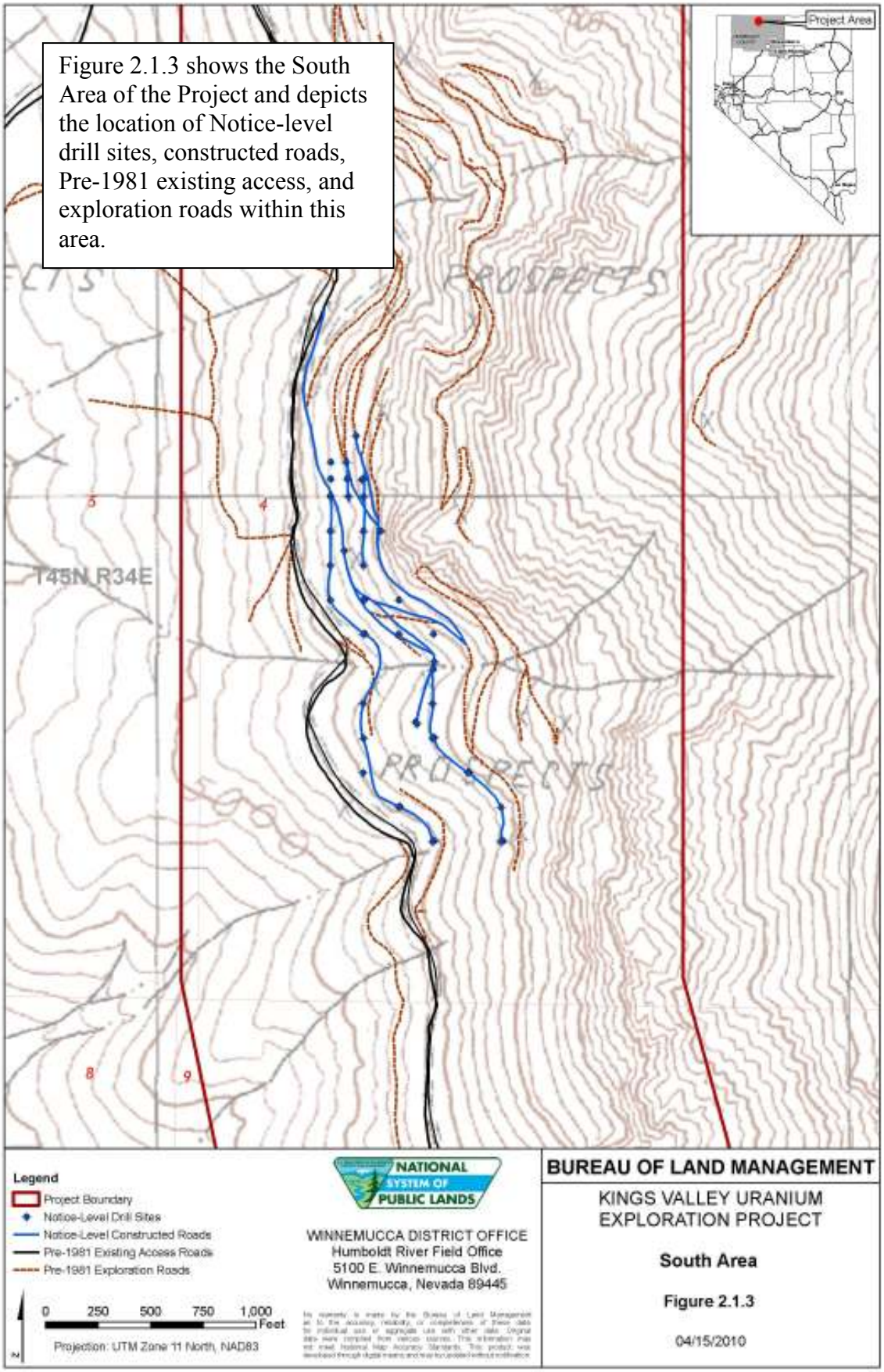
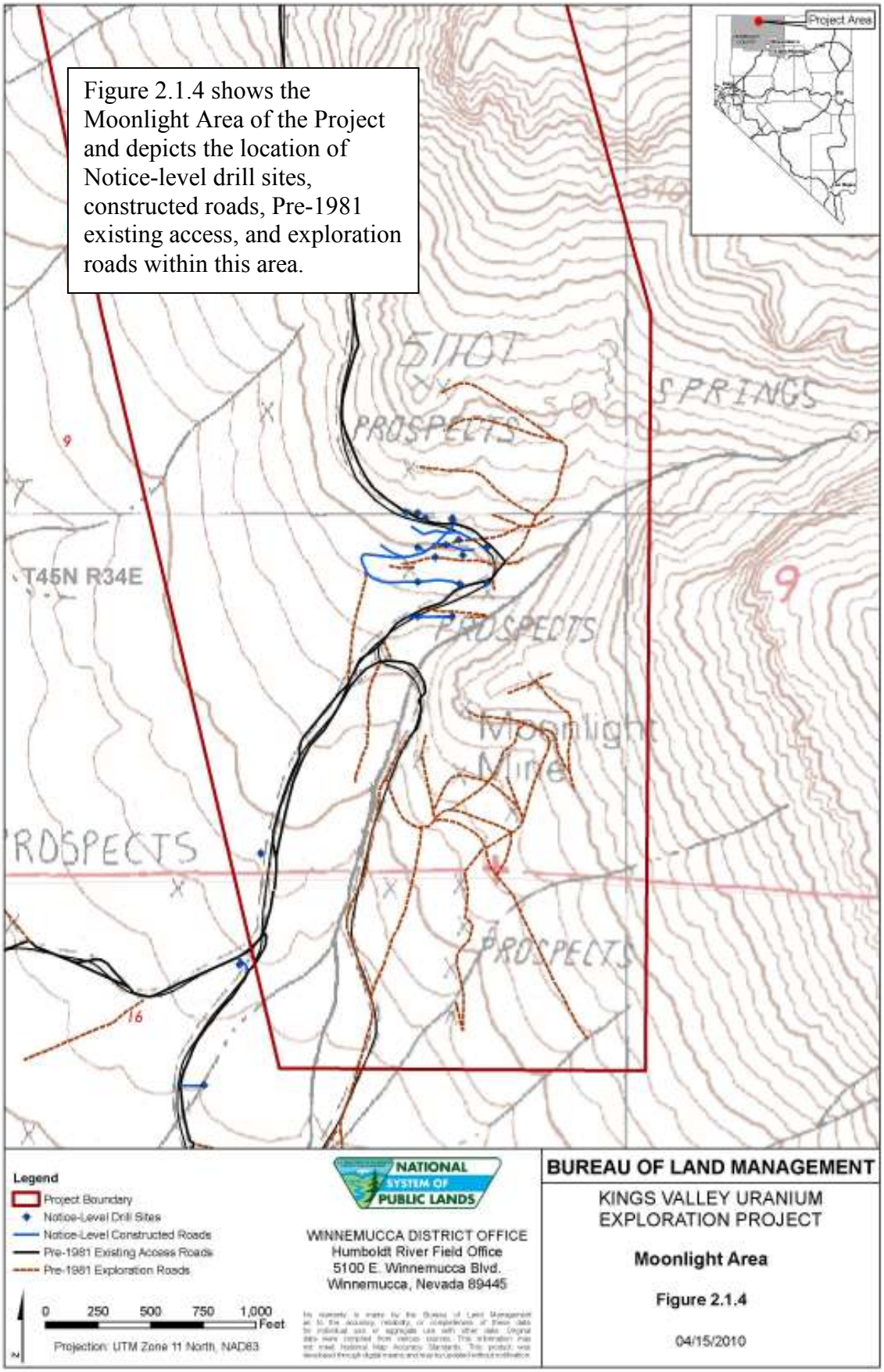


Figure 2.1.4: Project - Moonlight Area



exploration activities. The BLM would provide a review of the submittal prior to initiating activities under that phase. Environmental protection measures that would avoid impacts to protected resources are outlined in Section 2.1.11.

Additionally, WEDC would provide the BLM and BMRR an annual report on, or before, April 15th 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 of T45N, R34E, sections 4, 9, and 16, and T46N, R34E, sections 22, 27, 28, 33, and 34 in Humboldt County, Nevada (Figure 1.1.1). The Project can be found on the United States Geological Survey (USGS) 7.5-minute topographic quadrangle Calavera Canyon. 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 24 miles to Horse Creek Road on the north side of SR 293. Access to the Project Area is provided by existing dirt roads that run east from Horse Creek Road approximately six to 11 miles north of the junction with SR 293. Dispersed recreationists involved in hunting, fishing, rock collecting and other recreation activities would still be able to access through the project area although some exploration roads will be temporarily blocked by drilling activities.

2.1.2 Exploration Drill Sites

The first phase of the Proposed Action would consist of keeping new drill site disturbance to the minimum necessary for safe access and providing a safe working area for equipment and crew. Sumps would be constructed at each drill site to collect drill cuttings and manage drilling fluids. Drill sites would not be located in drainages. Drill sites would average approximately 60 feet by 40 feet in size. Surface disturbance would vary based on the slope of the terrain where the sites are constructed. It is estimated that the disturbance width of drill sites would average between 55 and 89 feet. Sumps, typically two per drill site and associated spoil piles would be constructed, as necessary at each drill site. The Project would consist of drilling exploration holes utilizing track or truck mounted reverse circulation or core drill rigs and support equipment. Drill holes would be both vertical and angled with drill depths of up to approximately 600 feet. Drill holes would range in diameter from three to six inches.

Cuttings not bagged and removed during sample collection would be used as a source of backfill and placed back 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. No cuttings with radiation levels above the background would be left on the surface. Specific measures related to radiation are detailed in Section 2.1.11.

The Project would also include monitoring wells. Monitoring wells are not planned to be constructed in the first phase of the Project. In subsequent phases of the Project, monitoring wells could be installed at any of the drill sites in order to monitor ground water chemistry and depth. The specific drill site would depend on geology encountered in the exploration drilling and the location of the water table. Monitoring wells would be installed consistent with the Nevada Division of Water Resource's (NDWR's) requirements. A monitoring well waiver from NDWR for the completion of the wells would be obtained prior to installation of the wells.

2.1.3 Road Construction

The Project Area would be accessed via pre-1981 existing roads (Figures 2.1.1 through 2.1.4) and WEDC would, to the extent practicable, utilize 40,033 feet of drill roads constructed prior to January 1, 1981, by previous operators. None of the pre-1981 disturbance was recontoured; however, the area has revegetated naturally through colonization by species from adjacent, undisturbed areas. Some of these roads that have undergone natural revegetation may be cleared of brush and sloughing and some may be bladed. All construction activities would be consistent with applicable BLM-approved Best Management Practices (BMPs).

When new road construction is necessary, roads would be built with a 15-foot running surface and disturbance widths between 20 and 34 feet depending on the steepness of topography and would include the construction of waterbars. It is anticipated that new roads would have an average disturbance width of 20.5 feet to 33.5 feet. 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 possible to minimize the exposed cut slopes and the volume of fill material. Since the depth of cut would be kept to a minimum, growth media removed during construction would be stockpiled as the fill slope and used during reclamation. Road construction within drainages would be avoided whenever possible. When drainages must be crossed with a road, BMPs established by the NDEP and the Nevada Division of Conservation Districts (1994) 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 need to be approved by the BLM and BMRR.

Brush removal, berm construction, and new road construction would be performed with a Cat D7 or equivalent and would occur intermittently throughout the life of the Project (per Mine Safety Health Administration [MSHA] regulations). As previously stated, WEDC would utilize naturally revegetated roads to the extent possible; however, alternate road locations may be determined in the field based on geologic information collected during the exploration program. Road grades would be kept to an average of six percent or less to minimize erosion. Where steeper grades are unavoidable, water bar spacing would not exceed 200 feet. Water bar spacing on flatter slopes would average 300 to 400 feet, or at a distance approved by the BLM.

Maintenance of exploration roads would include minor seasonal regrading and re-establishment of water bars as necessary. Erosion control would be monitored in the spring and fall, as well as after major storm events when Project activities are occurring. Road maintenance would consist of smoothing rutted surfaces and holes on existing access and drill roads. Maintenance of existing roads would be conducted on an as-needed basis.

2.1.4 Equipment

WEDC would conduct exploration drilling with a truck- or track-mounted LF140 or LF90 core drill rig and/or an Ingersoll Rand TH-75 reverse circulation drill rig or equivalent. The Proposed Action would include two operating drill rigs, two 3,500-gallon water trucks, mud mixing tanks and pump, circulation tank, all-terrain vehicles, two pipe trucks, two booster trucks, two auxiliary air compressors, and two portable light plant/generators. Drill crews and Project personnel would access the Project Area in four-wheel drive vehicles (i.e., pick-up trucks).

Roads and drill sites would be reclaimed using an excavator and all-terrain vehicle with a seed broadcaster, or comparable method. WEDC would take steps to prevent fires by ensuring that each field vehicle carries hand tools and a fire extinguisher. All portable equipment, including drill rigs, support vehicles, and drilling supplies, would be removed from the Project Area during extended periods of non-operation.

All equipment would be properly muffled and equipped with suitable and necessary fire suppression equipment, such as fire extinguishers and hand tools. All Project-related traffic would observe prudent speed limits to enhance public safety, protect wildlife and livestock, and minimize dust emissions. All activities would be conducted in conformance with applicable federal and state health and safety requirements.

2.1.5 Water Use

Water would be used for dust suppression and during drilling to cool the drill bit and remove drill cuttings. Water would be utilized with or without nontoxic drilling additives. Water would be obtained from a well owned by the Kings River Ranch located approximately two miles northwest of the Project Area in T45N, R34E, northeast corner of section 7. The Kings River Ranch is located on private land and the water source is a private source. Appropriate water use/rights permits would be obtained as required.

2.1.6 Work Force

Standard drilling procedures would require a geologist to be on site throughout Project-related 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 operator and one or two helpers. The drill rig operator would be in charge of the drill rig itself and would make decisions regarding drilling techniques and equipment. The helpers would be responsible for removing and boxing the recovered core samples, removing the cuttings from reverse circulation rigs, mixing drilling fluids in the portable mud tank, operating the water truck, assisting with drilling operations, and conducting maintenance as necessary.

Up to eight individuals could be in the Project Area at the same time (three contract personnel per drill rig crew and one WEDC-employed geologist per drill rig for two drill rigs). Personnel would travel to and from the drill site in four wheel drive pickup trucks. Drilling activities would generally be limited to daylight hours but may continue up to 24 hours per day for some drill rigs.

2.1.7 Solid and Hazardous Materials

All Project-related regulated refuse would be removed from the Project Area and disposed of in a state, federal, or local designated area on a daily basis. No refuse would be disposed of on site. Porta potties would be available in the Project Area for use by Project personnel.

Solid and 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 BMRR. 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 WEDC'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.

2.1.8 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. Limited reclamation activities would be conducted concurrent with exploration activities in areas where it has been determined that exploration disturbance is no longer needed. Reclamation would begin at the earliest practicable time within the exploration areas that have been deemed inactive, without potential, or completed. Specific details for reclamation of uranium exploration drill sites are outlined in Section 2.1.11.

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. Complete 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 approximately three years from the time of seeding.

Regrading and reshaping of newly constructed drill sites and exploration roads would be completed to approximate the original topography. Fill material, enhanced with growth media, would be pulled onto the roadbeds to fill the road cuts and restore the slope to natural contours. Roads and drill sites would be regraded and reshaped with an excavator.
The extent of reclamation for re-opened pre-1981 roads would be determined by the BLM in consultation with WEDC. In general, reclamation of re-opened pre-1981 exploration roads

would consist of removal of berms, stabilization (which may include recontouring), regrading or scarifying the road bed, and re-seeding. Some of the roads would not be fully recontoured due to the steepness of the terrain and the lack of undisturbed material.

For overland travel roads or pads, tire tracks (trails created by overland travel and track rigs) 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 seeding.

Table 2.1-2: Anticipated Reclamation Schedule

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

Note: Shading indicates activities could occur during this quarter.

Reclamation of the pre-1981 roads would include removal of the safety berm, bringing the road back to its original pre-1981 width, and reseeding.

Should any drainages be disturbed, they would be re-shaped to approach the pre-construction 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 (rip-rap) where necessary, and ultimately revegetated.

The proposed seed mix is in Table 2.1-3, 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, and are proven species for revegetation native and introduced plant species. Introduced species to be used are in compliance with Executive Order 13112 Invasive Species. Broadcast seeding would be at a rate of approximately 8.6 pounds of pure live seed per acre. Changes and/or adjustments to the seed mix and/or application rate would be completed in consultation with and approval by, the BLM and BMRR.

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 by April 15th.

Table 2.1-3: Proposed Seed Mix

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

* 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.

2.1.9 Surface Occupancy

Under CFR 3809 Part 710 Section 3715.01, 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. Residences 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. WEDC 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 and samples until they can be retrieved by a laboratory technician. Fencing would be used to protect open 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.

2.1.10 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.

2.1.11 Environmental Protection Measures

WEDC has committed to the following environmental protection measures to prevent unnecessary or undue environmental degradation during construction, operation, and reclamation activities of the Proposed Action. The measures are derived from the general requirements established in BLM Surface Management Regulations at 43 CFR 3809, as well as other water, air quality, and environmental protection regulations.

Wildlife

- If Project-related surface disturbance (i.e., vegetation removal, road construction, drilling) would occur during the raptor nesting season, a survey for active raptor nests (with eggs or young) would be conducted by a qualified biologist. If present, active golden eagle (*Aquila chrysaetos*) nests would be avoided by an area one-half mile in radius from February 15 to July 1, or until the young are fledged, of each year the nest is active. If present, active prairie falcon (*Falco mexicanus*) nests would be avoided by an area 0.25 mile in radius from April 1 to July 1, or until the young are fledged, of each year the nest is active. The results of the nesting raptor survey would be reported to the BLM Biologist.

- 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 (with eggs or young). 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 (including raptor 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.

- If possible, WEDC would avoid exploration drilling between March 15 and May 15 to protect greater sage-grouse (*Centrocercus urophasianus*) lekking activity. However, if avoidance is not possible during this time period, WEDC would avoid drilling from one hour before sunrise until noon between March 15th and May 15th. WEDC would begin drilling from sites located furthest from known leks sites (See figure 3.7.1 for lek avoidance area) to protect greater sage-grouse and their lekking activity.

- WEDC would avoid road construction and drilling activities between May 1 and June 30 to protect bighorn sheep (*Ovis canadensis californiana*) during the lambing season.

- An open adit located at the Moonlight Mine has the potential to serve as sensitive bat species habitat. WEDC would avoid drilling within 600 feet of the Moonlight Mine adit year-round, unless a survey is conducted by a qualified bat biologist to determine whether the adit serves as sensitive bat species habitat. If a survey finds the adit does provide habitat for sensitive bat species, the restriction could be modified temporally so that the avoidance of 600 feet would apply only during the times of the year when the adit is utilized by sensitive bat species. If a survey finds the adit does not provide habitat for sensitive bat species, the 600-foot restriction may be lifted.

Cultural Resources

- WEDC would avoid all National Register of Historic Places (NRHP) eligible sites and/or contributing elements of eligible cultural sites by a buffer zone of 100 feet. If eligible sites or contributing elements cannot be avoided, they would be 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 WEDC initiating activities under that phase to ensure the protection of all NRHP eligible sites and/or contributing elements of eligible sites. All travel along the Horse Creek Canyon road in the vicinity of CrNV-02-8590 would be restricted to the existing road bed and no heavy equipment would be driven or transported on this road in the vicinity of CrNV-02-8590.

- Pursuant to 43 CFR 10.4(g), WEDC 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.

Drilling Procedures

- New roads and drill sites would not be constructed within 50 feet of any spring or riparian scrub community (i.e., Calavera Canyon). BMPs would be followed for sediment control and would be utilized during construction, operation, and reclamation to avoid negative impacts to springs or 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 would be used in conjunction with the sediment sumps/traps so that the recirculating of drilling fluids can be maximized.

- All drill holes would be plugged prior to the drill rig moving from the drill site in accordance with NRS 534 and NAC 534.4369 and NAC 534.4371 with the exception of drill holes collared with a reverse circulation drill rig for completion with a core rig. Drill holes completed with a core rig would be plugged prior to the core rig moving from the drill site. In the unlikely event that any drill hole produces artesian flow, the drill hole would be contained pursuant to NRS 534.060 and NAC 534.378 and would be sealed by the method described in Subsection 2 of NAC 534.4371. If casings are set in a drill hole, either the drill hole must be completed as a well and plugged pursuant to NAC 534.420 or the casings would be completely removed and the drill hole would then be plugged according to NAC 534.4369 and NAC 534.4371.

- In accordance with Joint Agency Guidelines for Uranium Exploration Drilling Reclamation June 26, 2007, by the New Mexico Mining and Minerals Division, BLM, and USFS, WEDC would provide documentation (including maps) of radiation readings pre-disturbance/background, during disturbance, and then post-disturbance. Pre-disturbance readings would be considered background and the data used as a reclamation standard for any necessary radiation cleanup for the site.

    - Gamma ray emissions would be utilized as the basis for establishing the background standard. Readings would be taken one meter above the ground at the staked drill hole location. All radiation measuring devices would be calibrated annually. The readings would be taken unshielded with a Ludlun microR or similar gamma radiation measuring device.

- Dry holes would be backfilled with cuttings or clean native fill or other approved materials and then installation of a nonmetallic plug ten feet below the surface and backfilled with concrete to within one foot of ground surface. The remaining hole would be filled with native soil/material.

- Within 30 days wet holes would be filled from the bottom up using a tremie (i.e., funnel), and the well would be plugged with neat cement slurry, bentonite base material, or other sealing material approved by the State of Nevada.

- Drill cuttings would be contained and drilling fluids managed. All sumps would be backfilled at the end of each drilling season.

- All core and cuttings that show radioactive readings in excess of background readings would be buried with clean native soil or other acceptable soil/material and covered with no less than three feet of soil to bring radiation levels back to background levels. If bedrock is located at the site, then cuttings would be removed and relocated to an approved site and covered with a minimum of three feet of clean native soil or approved ground cover material.

- In the event that background radiation levels cannot be replicated with a three-foot cover, the following radiological standard for "uncontrolled access to mill tailings" would be utilized: a maximum of 12 micro Roentgen per hour above background radiation is acceptable if background radiation levels cannot be met through standard mitigation. (The above Joint Agency Guidelines for Uranium Exploration Drilling Reclamation reference states that the value of 12 micro Roentgen per hour has been determined to be a safe standard for mill tailings by the Nuclear Regulatory Commission [10 CFR Part 20, subpart D]).

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

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

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

- All unattended sumps would be adequately fenced to preclude access or ramped.
- Only nontoxic drilling products would be used in the drilling process.

- WEDC would follow the Spill Prevention Plan from Appendix D of the Plan.

- 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.

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

- All solid wastes would be 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.

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.

Noxious Weeds

- 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.

Air Quality

- Emissions of fugitive dust from disturbed surfaces would be minimized by utilizing appropriate control measures. Surface application of water from a truck is the current method of dust control during high wind conditions. Speeds would be limited to 15 miles per hour on the unpaved roads to control dust.

Visual

- WEDC would utilize directional lighting with shields for Project activities at night in order to minimize visual impacts in the Project Area.

2.2 No Action Alternative

Under the No Action Alternative, the BLM would not approve the Proposed Plan and would not authorize the Proposed Action. The area would remain available for other multiple use activities, as approved by the BLM. Under the No Action Alternative, up to five acres on each Notice could be disturbed or redisturbed. Authorized drill holes have been plugged, authorized sumps have been backfilled, and reclamation earthwork has been completed. Additional exploration activities such as drilling and road construction under the Notice could occur on the authorized disturbance. Reclamation of authorized Notice-level activities includes backfilling, recontouring, and reseeding.

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 travel 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 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 the maximum extent possible.

2.3.3 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. Additionally, 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 all of the 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-controlled 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 located within the historic Disaster Mining District which was established in the 1870s. Small amounts of gold, silver, mercury, and uranium have been produced. The historic Moonlight Mine is located at the southern end of the Project Area. This mine is reported to have produced about 500 tons of uranium ore in the 1950s.

In the 1970s Chevron Minerals, Anaconda, and other operators conducted exploration activities for uranium in and around the Project Area that resulted in numerous roads measuring approximately 178,640 feet (i.e., 33.8 miles) in the Project Area. This disturbance was created prior to the reclamation regulations implemented in 1981. In the 30 years since the disturbance was created, these roads have naturally revegetated and the cut banks have naturally stabilized. The impacts to visual resources from these activities consist of linear features (i.e., roads) with a texture and color similar to nearby undisturbed areas within the Project Area since the roads have naturally vegetated.

The Project Area is crosscut by a number of pre-existing roads. 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, which lies between Horse Creek and Calavera Canyons, is located along the western margin of the McDermitt Caldera Complex. The caldera complex, comprising a number of nested collapse cauldrons, developed along the margin of a major northwest-southeast trending rift formed in the Early Miocene (20 to 22 million years ago).

Initially, mafic to intermediate flows and associated sedimentary rocks were deposited on a highly irregular granitic surface within a structural depression (Rytuba and Glanzman 1978). After the rift graben was filled, rhyolitic volcanism began in the McDermitt area 18.9 million years ago with the eruption of rhyolite domes. Five large-volume ash-flow tuffs were subsequently erupted from 18.5 to 15.6 million years ago, each resulting in the formation of a collapse caldera. Each of the first four major eruption began with the venting of comendite (75 percent SiO_2 and 11.2 percent Al_2O_3) ash-flow tuffs and ended with the venting of ash flows lower in SiO_2 (70 to 68 percent) and higher in Al_2O_3 (12.6 to 13.6 percent). The systematic change in chemistry during each major eruption reflects the venting from progressively lower

levels of a zoned magma chamber. The final episode of volcanism consisted of the emplacement of small intrusives and domes whose compositions are similar to those of the high-silica comendites vented at the beginning of each of the major ash-flow tuff eruptions. These last rhyolites tapped only the upper portion of a similarly zoned magma chamber (Rytuba and Conrad 1981).

The eruption of these voluminous ash-flow-tuffs resulted in caldera collapse and the creation of a series of arcuate or "ring" fracture systems. Some of these ring fractures, including those along the western margins of the caldera complex were subsequently intruded by rhyolitic dikes.

Uranium mineralization in the Project Area principally occurs in fractured rhyolitic dikes ("porcelain rhyolite") and fractured portions of intruded andesite flows and rhyolite tuffs and domes within or adjacent to caldera ring fractures. Primary uranium mineralization was most likely hydrothermal in origin and was either removed from earlier rhyolites with higher than normal uranium content or accompanied their emplacement from the parent magma. Secondary uranium mineralization is a result of redistribution by subsequent groundwater movement.

Basin and range faulting was responsible for exposing the volcanic rocks that accumulated along the western margin of the caldera and most of the extensional faulting in the Great Basin began about 17 million years ago. Fault scarps in alluvium in the nearby Kings River Valley indicate that faulting is still active.

Under the Potential Fossil Yield Classification (PFYC) system, the entire Project Area is located within an area rated as Class I (i.e., very low potential) primarily due to the volcanic or intrusive nature of the rocks in the Project Area. There are no known paleontological sites in or near the Project Area.

The Project is located within the Kings River Valley hydrographic basin (NDWR Groundwater Basin #30). 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 Mountains, by movement of ground water from consolidated rocks into the alluvial basin-fill deposits, and from surface water sources such as streams and rivers.

During precipitation and snowmelt, runoff from the slopes of the Montana Mountains water would move across the alluvial fan where much of it would infiltrate the soil 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 suggest that the ground water resources of the Project Area are limited.

Surface water in the Project Area is very limited and generally intermittent. Five springs (T45N, R34E, section 9) are located within the Project Area. There are two spring-fed perennial creeks located in the Project Area that include Horse and Calavera Creeks. Additional small ephemeral drainages are located within the Project Area, the largest drainage is located in the southern portion of the Project Area in Calavera Canyon. Riparian vegetation is located along Calavera Canyon in the Project Area.

Three wildland fires (i.e., Moonlight, Covert, and Horse Creek) burned approximately 447 acres in the southern portion of the Project Area in 2006. The 2006 wildland fires burned the lower elevations of the western face of the Montana Mountains in a northwest-southeast aspect.

Tables 3.1-1 and 3.1-2 outline the supplemental authorities (critical elements of the human environment) and additional affected resources for the Project.

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	X			Element is not present.
Cultural Resources			X	See Section 3.3.
Environmental Justice	X			No environmental justice issues are 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 3.7. Ground water not affected, see Section 3.1.
Wetlands and Riparian Zones		X		See Section 3.1. No surface disturbance is proposed in the riparian zone associated with Calavera Canyon.
Wild and Scenic Rivers	X			Element is not present.
Wilderness	X			Element is not present.

Table 3.1-2: Additional Affected Resources

Other Resources	Present, Potentially Affected	Reference Section
Economics	X	See Section 3.10.
Rangeland Management	X	See Section 3.8.
Social Values	X	See Section 3.9.
Soils	X	See Section 3.11.
Special Status Species	X	See Section 3.12.
Vegetation	X	See Section 3.13.
Visual Resources	X	See Section 3.14.
Wildlife	X	See Section 3.15.

3.2 Air Quality

The Project is located within the Kings River Valley hydrographic basin of the Black Rock Desert Region, which is considered in attainment relative to the Environmental Protection Agency (EPA) Region 9 air quality standards. 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 4,465 feet to 6,425 feet amsl with an average elevation of approximately 5,450 feet amsl.

The Project is located northwest of Thacker Pass, north of SR 293 in Kings River Valley on the west flank of the Montana Mountains. 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 nine 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 was completed by ASM Affiliates in 2008. Several previous cultural resource inventories were conducted in the vicinity of Horse Creek and the western slope of the Montana Mountains; however, none were conducted within the Project Area boundary. The current inventory project resulted in the discovery of 21 isolated finds and nine new cultural resource sites (CrNV-02-8584 to CrNV-02-8591, and CrNV-02-8726). Of the nine new sites encountered during the inventory, seven (CrNV-02-8584, -8585, -8586, -8588, -8589, -8591, and -8726) have been determined by the BLM to be ineligible to the NRHP. The prehistoric component of CrNV-02-8587 has been determined to be eligible to the NRHP under Criterion D, while the historic component has been determined to be ineligible to the NRHP. In addition, site CrNV-02-8590 has been determined to be eligible to the NRHP under criteria A and D. The Nevada SHPO concurred with these determinations on May 21, 2009.

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.

The Nevada Department of Agriculture classifies weeds into three categories (NAC 555.010). Category A weeds are defined as "weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the state in all infestations." Category B weeds are defined as "weeds established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur." Category C noxious weeds are defined as "weeds currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer."

Russian thistle (*Salsola tragus*) is a weedy, nonnative species observed in the Project Area. The BLM has also treated scotch thistle (*Onopordum acanthium*) and hoary cress (*Cardaria draba*) infestations below the Moonlight Mine in the Project Area. Scotch thistle and hoary cress are classified as Category B and Category C noxious weeds, respectively, by the Nevada Department of Agriculture.

The following species could occur in the Project Area: cheatgrass (*Bromus tectorum*); Russian knapweed (*Acroptilon repens*); perennial pepperweed (*Lepidium latifolium*); salt cedar (*Tamarix* sp.); and whitetop (*Cardaria draba*) (personal communication, Derek Messmer, BLM Biologist, February 24, 2009). Although cheatgrass is a weedy, nonnative species, it is not considered a noxious weed by the Nevada Department of Agriculture. Perennial pepperweed, salt cedar, and whitetop are classified as Category C noxious weeds by the Nevada Department of Agriculture.

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 Memorandum of Understanding (MOU) between the BLM and the United States Fish and Wildlife Service (USFWS), signed January 17, 2001. The purpose of this MOU is to strengthen migratory bird conservation through enhanced collaboration between the BLM and USFWS, in coordination with state, tribal, and local governments. The MOU identifies management practices that impact populations of high priority migratory bird species, including nesting, migration, or over-wintering habitats, on public lands, and develops management objectives or recommendations that avoid or minimize these impacts.

According to the Nevada Department of Wildlife (NDOW) in a letter dated November 24, 2009, the following migratory bird raptor species have ranges that overlap with the Project Area and vicinity: American kestrel (*Falco sparverius*); barn owl (*Tyto alba*); burrowing owl (*Athene cunicularia*); Cooper's hawk (*Accipiter cooperii*); ferruginous hawk (*Buteo regalis*); golden eagle (*Aquila chrysaetos*); great horned owl (*Bubo virginianus*); long-eared owl (*Asio otus*); northern goshawk (*Accipiter gentilis*); northern harrier (*Circus cyaneus*); northern saw-whet owl (*Aegolius acadicus*); osprey (*Pandion haliaetus*); peregrine falcon (*Falco peregrinus*); prairie

falcon (*Falco mexicanus*); red-tailed hawk (*Buteo jamaicensis*); sharp-shinned hawk (*Accipiter striatus*); short-eared owl (*Asio flammeus*); and Swainson's hawk (*Buteo swainsoni*).

According to the NDOW in a letter dated November 24, 2009, the following migratory bird species have been recorded within the Project Area and five-mile buffer around the Project Area: American crow (*Corvus brachyrhynchos*); American robin (*Turdus migratorius*); bank swallow (*Riparia riparia*); black-billed magpie (*Pica hudsonia*); Brewer's blackbird (*Euphagus cyanocephalus*); Brewer's sparrow (*Spizella breweri*); Bullock's oriole (*Icterus bullockii*); chipping sparrow (*Spizella passerina*); cliff swallow (*Petrochelidon pyrrhonota*); common raven (*Corvus corax*); dusky flycatcher (*Empidonax oberholseri*); gray flycatcher (*Empidonax wrightii*); green-tailed towhee (*Pipilo chlorurus*); hairy woodpecker (*Picoides villosus*); horned lark (*Eremophila alpestris*); house finch (*Carpodacus mexicanus*); lark sparrow (*Chondestes grammacus*); Lewis's woodpecker (*Melanerpes lewis*); loggerhead shrike (*Lanius ludovicianus*); mallard (*Anas platyrhynchos*); mountain bluebird (*Sialia currucoides*); mourning dove (*Zenaida macroura*); northern flicker (*Colaptes auratus*); orange-crowed warbler (*Vermivora celata*); red-breasted nuthatch (*Sitta canadensis*); rock wren (*Salpinctes obsoletus*); sage sparrow (*Amphispiza belli*); sage thrasher (*Oreoscoptes montanus*); savannah sparrow (*Passerculus sandwichensis*); spotted towhee (*Pipilo maculatus*); turkey vulture (*Cathartes aura*); vesper sparrow (*Pooecetes gramineus*); violet-green swallow (*Tachycineta thalassina*); warbling vireo (*Vireo gilvus*); western meadowlark (*Sturnella neglecta*); white-crowed sparrow (*Zontrichia leucophrys*); yellow warbler (*Dendroica petechia*); and yellow-rumped warbler (*Dendroica coronata*).

Burrowing owl, ferruginous hawk, golden eagle, northern goshawk, peregrine falcon, prairie falcon, short-eared owl, Swainson's hawk, Lewis's woodpecker, loggerhead shrike, and vesper sparrow are BLM sensitive species.

In 2007, there was an active prairie falcon (*Falco mexicanus*) nest observed in T45N, R34E, section 4 and in that same year there was an active prairie falcon nest and an active golden eagle nest observed in T45N, R34E, section 9 (NDOW 2009). The southwestern portion of the Project Area is within known northern harrier distribution.

3.6 Native American Religious Concerns

The BLM contacted the Fort McDermitt Paiute and Shoshone Tribe by letter on November 14, 2008. Following Tribal elections, the letter was resent to the new Tribal Chair, Dale Barr, on March 16, 2009. Chairman Barr and other Tribal members participated in a field tour of the proposed Project Area on May 1, 2009. Mr. Barr identified a sacred site in the vicinity of the Project Area. However, it was determined that the sacred site would not be impacted by the Proposed Action. In a conversation with HRFO BLM Archeologist Peggy McGuckian on September 1, 2009, Mr. Barr expressed concerns about air quality. Information regarding impacts to air quality was prepared by HRFO Soil Scientist Mike Zielinski and forwarded to Mr. Barr through Mr. McMasters, Fort McDermitt Environmental Coordinator, on October 8, 2009. As described by Mr. Zielinski, impacts to air quality would be minimal.

3.7 Water Quality

The Project is located within the Kings River Valley hydrographic basin. The Project Area is located on the northwestern slopes of the Montana Mountains.

Surface Water

There are numerous small drainages located within the Project Area, the largest drainage is located in the southern portion of the Project Area in Calavera Canyon.

Five springs are located within the Project Area as shown on Figure 3.7.1. Three springs are located in T46N, R34E, section 27. Two springs are located in T45N, R34E, one in section 4 and one in section 9.

Two perennial, spring-fed streams are located within the Project Area and include Horse Creek and Calavera Creek.

3.8 Rangeland Management

The Project Area is within the Horse Creek grazing allotment administered by the HRFO. The following rangeland management information has been collected from the BLM. The Little Horse Creek and Jordan Meadow allotments adjoin the Project Area immediately to the east. A portion of the Lower Horse Creek drift fence extends into the Project Area (Figure 3.7.1).

The Horse Creek Allotment consists of approximately 39,866 acres of public and private lands. There is one permittee authorized to graze cattle from April 15 through September 14 each year. There are numerous range improvements (Figure 3.7.1) within the Horse Creek Allotment including approximately 1,000 linear feet of fence (T46N, R34E, section 33) and the Calavera Canyon water pipeline within the Project Area.

3.9 Social Values

The BLM ID team and public scoping identified potential public concerns associated with uranium exploration. Some of the concerns are that exploration activities for radioactive minerals may affect their health and the environment. These concerns also pre-suppose that exploration activities would result in a mine and expansion of nuclear energy within the United States. The Proposed Action would comply with all applicable state and federal regulations regarding mineral exploration for naturally occurring radioactive materials (e.g., uranium). This EA only addresses exploration.

3.10 Economics

The Project Area is located in Humboldt County, Nevada, approximately 63 miles north-northeast of Winnemucca, Nevada, on existing dirt roads that run east from Horse Creek Road approximately six to 11 miles north of the junction with 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 2009a). 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).

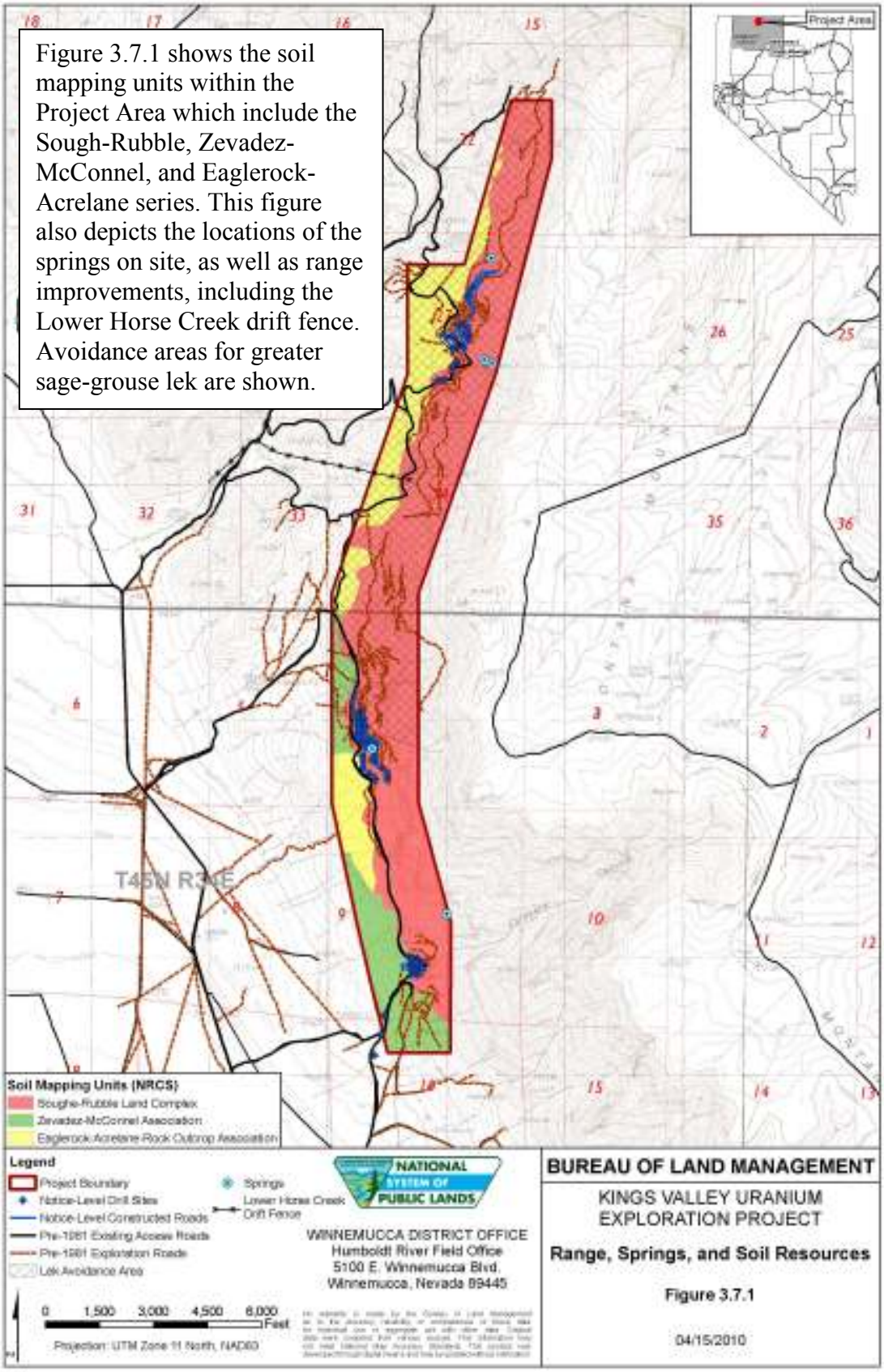
3.11 Soils

Information regarding soils within the Project Area was obtained 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 3.11-1 and are shown on Figure 3.7.1. The soils in the Project Area range from slight to moderate in their susceptibility to erosion by wind and water. The majority (66 percent or approximately 916 acres) of the soils within the Project Area are made up of the soil mapping unit 946 Soughe-Rubble land complex. Soughe soils consist of residuum and colluvium derived from mixed rocks and occurs primarily on rock core areas of fan piedmont remnant mountain slopes with 30 to 75 percent grades. Soughe soils are ten to 20 inches deep to underlying bedrock. Soughe soils are well drained. The Soughe soil series makes up approximately 50 percent of Soughe-Rubble land complex and typically consists of very cobbly loam above very gravelly clay loam. The remaining components of the Soughe-Rubble land complex are made up of rock rubble from miscellaneous sources. The Soughe-Rubble land complex is slightly susceptible to wind and water erosion (NRCS 2008).

Table 3.11-1: 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		
Soughe-Rubble	946	Slight	916
Zevadez-McConnel	963	Moderate	179
Eaglerock-Acrelane	1500	Slight	288

Figure 3.7.1: Range, Springs, and Soil Resources in the Project Area



Approximately one-fifth (21 percent or approximately 288 acres) of the soils within the Project Area are made up of the soil mapping unit 1500 Eaglerock-Acrelane-Rock outcrop association. These soils lie along the western edge, primarily in the northern half, of the Project Area. The Eaglerock and Acrelane soil series both derive from residuum and colluvium from granitic rocks and occur on mountain slopes with 15 to 50 percent grades. These soils are generally ten to 40 inches deep to underlying paralithic bedrock. Eaglerock and Arcelane soils are well drained. The Eaglerock series makes up approximately 45 percent of the association and typically consists of gravelly coarse sandy loam that transitions into very gravelly loam and very gravelly sandy clay loam. The Acrelane series makes up approximately 30 percent of the association and typically consists of extremely gravelly coarse sand and gravelly loam over gravelly coarse sandy loam and very gravelly sandy clay loam. The remaining 25 percent of the association is made up of minor components and miscellaneous rock outcrops. The Eaglerock-Acrelane-Rock outcrop association is slightly susceptible to water erosion and moderately susceptible to wind erosion (NRCS 2008).

The remainder of the Project Area (13 percent or approximately 179 acres) consists of the soil mapping unit 963 Zevadez-McConnel association and is located primarily in the southwest corner of the Project Area. Zevadez and McConnel soils are very deep and consist of alluvium derived from mixed rocks, loess, and volcanic ash. Zevadez soils occur on fan piedmont remnants with slopes from two to eight percent and are well drained. McConnel soils occur on inset fans with slopes from two to eight percent and are somewhat excessively drained. The Zevadez series makes up approximately 50 percent of the association and typically consists of fine sandy loam above sandy clay loam. The McConnel series makes up approximately 40 percent of the association and consists of fine sandy loam over extremely gravelly sandy loam and coarse sand. The remaining ten percent of the Zevadez-McConnel association is made up of minor components. The Zevadez-McConnel association is moderately susceptible to wind and water erosion (NRCS 2008).

3.12 Special Status Species

Special status species are federally listed or proposed and BLM sensitive species, which include both Federal candidate species and delisted species within five years of delisting (BLM Manual 6840 – Glossary of Terms).

3.12.1 Sensitive Species

Sensitive species are species that require special management consideration to avoid potential future listing under the Endangered Species Act (ESA) and that have been identified in accordance with procedures set forth in BLM Manual 6840. 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. Note that “conservation” has a different meaning depending on whether it is referring to ESA listed species or Bureau sensitive species. See glossary. Bureau sensitive species will be managed consistent with species and habitat management objectives in land use and implementation plans to promote their conservation and to minimize the likelihood and need for listing under the ESA.”

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

Federal Candidate Species

Greater Sage-Grouse

The northeastern edge of the Project Area is located within the Greater Sage-Grouse Lone Willow Population Management Unit (PMU), and the rest of the Project Area is located just west of the PMU. The Project Area is located to the west of greater sage-grouse nesting and brood rearing habitat as well as greater sage-grouse summer and winter ranges (October through March). Although no leks are located within the Project Area, within a five-mile buffer of the Project Area there are 30 greater sage-grouse leks and two of these leks are located approximately 0.3 mile from the northeast corner of the Project Area. Figure 3.7.1 illustrates the portion of the Project Area located within two miles of known greater sage-grouse leks. Although a small portion of the Project Area is located within the PMU, no evidence of greater sage-grouse use was located within the Project Area during a survey conducted by Enviroscientists, Inc. on November 26, 2008. Vegetation in the Project Area was dominated by big sagebrush (*Artemisia tridentata*), spiny hopsage (*Grayia spinosa*), and fourwing saltbush (*Atriplex canescens*) with a canopy cover of 25 percent or less in the areas surveyed.

Other Sensitive Species

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 26, 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. One portion of the Project Area contained 19 acres of marginal habitat consisting of big sagebrush with less than 25 percent canopy cover and steep slopes. Transects were walked in the area of marginal habitat and no pygmy rabbit or sign were found. The southern portion of the Project Area was determined not to contain suitable habitat for pygmy rabbits due to the impacts to vegetation from wildland fire. The southern portion of the Project Area is dominated by annuals and lacks the shrub cover and density necessary to support pygmy rabbits.

Birds

Sensitive bird species that may be present in the area include golden eagle and prairie falcon. The entire Project Area is located within known golden eagle distribution. In 2007, there was an active prairie falcon nest in T45N, R34E, section 4 and in that same year there was an active prairie falcon nest and an active golden eagle nest in T45N, R34E, section 9 (NDOW 2009).

3.12.2 Species with Other Special Designations

Results from a Nevada Natural Heritage Program (NNHP) database search indicate that no sensitive species have been previously recorded within the Project Area; however, the Kings River pyrg (*Pyrgulopsis imperialis*), a springsnail determined to be critically imperiled by the NNHP, was recorded near Thacker Pass in a spring located north of SR 293 and in a spring south of SR 293. Both locations are south (and outside) of the Project Area. The Kings River pyrg was not inventoried in springs located within the Project Area. WEDC has proposed to avoid springs in the Project Area.

3.13 Vegetation

The Project is located within the Lahontan Basin Section of the Intermountain Region (Cronquist et al. 1972). Approximately 447 acres of vegetation in the southern portion of the Project Area were impacted as a result of three wildland fires in 2006.

Two main vegetation communities are recorded within the Project Area. The sagebrush community consists of mountain big sagebrush (*Artemisia tridentata* var. *vaseyana*) and Wyoming big sagebrush (*Artemisia tridentata* var. *wyomingensis*) and covers approximately 1,351 acres of the Project Area. Additional vegetation located in the mountain big sagebrush community in the Project Area includes spiny hopsage, fourwing saltbush, rubber rabbitbrush (*Crysothamnus nauseosus*), cheatgrass, Russian thistle, smotherweed (*Kochia* sp.), tumble mustard (*Sisymbrium altissimum*), phacelia (*Phacelia* sp.), and rockcress (*Arabis* sp.). The grassland vegetation community covers approximately 32.1 acres of the Project Area and is comprised primarily of cheatgrass.

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 steeply sloped west face of the Montana Mountains. The Project Area extends north and south along the mountain range and looks west over the Kings River Valley. A number of linear features (i.e., existing roads) created by previous operators are located within the Project Area.

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).

Previous mining and exploration activities have occurred in the Project Area resulting in constructed roads and mine sites.

The Project Area is located in a remote area with steep hillsides with little or no development. Scattered ranches are the only source of scattered light making dark skies common.

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. The entire west face of the Montana Mountains is critical habitat for many wildlife species (NDOW 2009). Common wildlife species observed in the Project Area during the wildlife survey conducted on November 26, 2008, include the following: California quail (*Callipepla californica*) and coyote (*Canis latrans*). During a site visit to the Project Area by the NDOW in February 2009, chukar (*Alectoris chukar*) were observed within the Project Area. Chukar are present in habitats of all elevations along the west face of the Montana Mountains year-round (NDOW 2009). The Project Area borders known distributions of rough-legged hawk (*Buteo lagopus*) and turkey vulture (*Cathartes aura*) to the southwest.

Big Game

The majority of the Project Area contains year-round mule deer (*Odocoileus hemionus*) habitat with the exception of the northern 25 percent of the Project Area which only contains summer mule deer habitat. Crucial winter habitat for mule deer is located within the southern half of the Project Area along the west face of the Montana Mountains (NDOW 2009). In 2009, the NDOW classified 213 mule deer on their winter range between Horse Creek to the west of the Project Area and Thacker Pass to the south of the Project Area (NDOW 2009). Mule deer scat and tracks were detected during the wildlife survey conducted on November 26, 2008.

The Project Area is located within the known range of pronghorn antelope (*Antilocapra americana*). The west face of the Montana Mountains provide spring and summer habitat for pronghorn antelope as well as winter habitat on a limited basis (NDOW 2009).

The Project Area is considered occupied California bighorn sheep habitat. The Project Area is located within the Montana Herd bighorn sheep area. California bighorn sheep occupy habitats of all elevations on the west face of the Montana Mountains from the top of the rim to the valley floor year-round. There is also lambing habitat along the north end of the west face of the Montana Mountains (NDOW 2009). During a site visit to the Project Area by the NDOW in February 2009, California bighorn sheep were identified within the Project Area and lambing season has been identified from May 1 through June 30.

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 discussed separately in Chapter 5.

4.1 Proposed Action

4.1.1 Air Quality

The Project has the potential to disturb 250 acres; disturbance would occur in phases over a ten-year period. Travel on dirt access roads and drilling within the area of the Proposed Action would create fugitive dust and vehicle emissions which would have a minimal impact to air quality from particulate matter less than 10 micrometers (PM_{10}), sulfur dioxide (SO_2), nitrogen oxide (NO_X), carbon monoxide (CO), and volatile organic compounds (VOC). Fugitive dust and vehicle emissions would occur for short periods during active exploration. Concurrent reclamation would lessen acres of disturbance and fugitive dust.

Fugitive dust would be caused by the operation of the following equipment: two drill rigs; two water trucks; mud mixing tanks and pump; two booster trucks; two pipe trucks; two auxiliary air compressors; two portable light plant/generators; and all terrain vehicles. Vehicle emissions would occur anytime the internal combustion engines on the vehicles are operating. Fugitive dust would be controlled by minimizing surface disturbance. Speed limits (e.g., 15 mph on unpaved roads) on access roads and roads within the Project Area would be observed. Impacts would be controlled by using water trucks for dust suppression, if required. Reclamation of surface disturbance would gradually eliminate fugitive dust from wind erosion.

All activities with surface disturbance exceeding 20 acres would be required to obtain a surface disturbance permit from the Bureau of Air Pollution Control (BAPC). WEDC would obtain a BAPC permit prior to exceeding 20 acres of disturbance. 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, WEDC would avoid all NRHP eligible sites and/or contributing elements of eligible sites by a buffer zone of 100 feet. If eligible sites or contributing elements cannot be avoided, they would be 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 WEDC initiating activities under that phase to ensure the protection of all NRHP eligible sites and/or contributing elements of eligible sites (Section 2.1.11). All travel along the Horse Creek Canyon road in the vicinity of CrNV-02-8590 would be restricted to the existing road bed and no heavy equipment would be driven or transported on this road in the vicinity of CrNV-02-8590. Therefore, no impacts to cultural resources are anticipated as a consequence of the proposed action.

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 invasive and nonnative species. These impacts would be minimal based on implementation of the environmental protection measures outlined in Section 2.1.11 and reclamation.

4.1.4 Migratory Birds

The wildlife environmental protection measure outlined in Section 2.1.11 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 and could include loss of habitat, forage, and cover. 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 approximately three years of Project completion.

4.1.5 Native American Religious Concerns

Although the McDermitt Tribe identified a sacred site in the vicinity of the Project Area, the Proposed Action would avoid the sacred site. Since all new disturbance associated with the Proposed Action would be reclaimed, there also should be no lasting impacts to the setting of the sacred site. The McDermitt Tribe also had a concern about impacts to air quality. Impacts to air quality are anticipated to be minimal.

4.1.6 Water Quality

Surface Water

The Proposed Action could result in impacts to surface water quality within ephemeral drainages as a result of spills and sedimentation from surface disturbance. Springs and riparian areas will be avoided by the action. 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 NDEP regulations. The potential impacts to surface water quality from sedimentation would be minimized by the implementation of environmental protection measures outlined in Section 2.1.11, 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 Rangeland Management

Potential impacts to rangeland improvements in the Project Area, could include 1,000 linear feet of existing fence line or a livestock water pipeline from Calavera Canyon. Disturbance as a result of the Proposed Action could impact 250 acres of public lands in the Horse Creek Allotment. 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) minimal impacts from the Proposed Action are expected to livestock grazing management.

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

Recommended Mitigation to Reduce Effects: Avoid rangeland improvements (Figure 3.7.1) within the Project Area in planning for the phased drilling, and should unintentional impacts occur to any range improvement by WEDC, WEDC should repair the improvement.

4.1.8 Social Values

The public perception of radioactive materials including uranium is that it will negatively impact their health and the environment; however, uranium occurs naturally in the Project Area. Although it is unlikely that any radioactive material encountered during exploration activities would result in additional exposure compared to naturally occurring background rates for uranium, the Project would comply with all applicable state and federal regulations for uranium exploration (Section 2.1.11). Exploration would consist of drilling a hole in the ground, removing a portion of the material from the hole to a location offsite for detailed chemical analysis, plugging the hole, and burying any drill cuttings left at the surface. No impacts to social values or public safety are expected as result of the Proposed Action.

4.1.9 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 slight erosion hazard for wind and water (i.e., Soughe-Rubble or Eaglerock-Acrelane) would result in lesser impacts from erosion compared to disturbance on the Zevandez-McConnel soil series (moderate erosion hazard).

Total surface disturbance associated with the Proposed Action would impact up to 250 acres of soils and could occur in any of the three soil series: Soughe-Rubble; Eaglerock-Acrelane; or Zevandez-McConnel (Figure 3.7.1). It is expected that the majority of surface disturbance

associated with the Project would occur on the Soughe-Rubble series since it occupies 66 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, 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. Following successful reclamation, soil loss due to the Proposed Action would be temporary and minimal.

4.1.11 Special Status Species

4.1.11.1 Sensitive Species

Federal Candidate Species

The environmental protection measures outlined in Section 2.1.11 would prevent direct impacts to greater sage-grouse lekking that may occur in the Project Area in the lek avoidance area illustrated in Figure 3.7.1. Potential indirect impacts to 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. Although a small portion of the Project Area is located within a PMU, the majority of the Project Area does not provide typical greater sage-grouse habitat. No greater sage-grouse have been observed in the Project Area and there are no leks located within the Project Area; however, the Project Area is located to the west of greater sage-grouse nesting, brood rearing, summer and winter habitat, and the Montana Mountains are known to have the largest greater sage-grouse population in the State of Nevada.

Other Sensitive Species

The Project Area and immediate vicinity are located within the known distribution of golden eagle and prairie falcon. The environmental protection measures outlined in Section 2.1.11 would prevent direct impacts to sensitive bird species in the Project Area. Potential indirect impacts could occur to foraging bird species in the Project Area as a result of vegetation removal and activities associated with the Proposed Action. 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 during reclamation.

4.1.11.2 Species with Other Special Designations

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 south (and

outside) of the Project Area; therefore, no impacts to the Kings River pyrg springsnail are expected as a result of the Project.

4.1.12 Vegetation

The Proposed Action would result in surface disturbance of approximately 250 acres of vegetation, including mountain big sagebrush, Wyoming big sagebrush, spiny hopsage, fourwing saltbush, rubber rabbitbrush, cheatgrass, Russian thistle, *Kochia* sp., tumble mustard, *Phacelia* sp., and rockcress. The disturbance would be created incrementally and dispersed throughout the big sagebrush vegetation community in the Project Area. Concurrent reclamation would occur throughout the Project using a BLM approved seed mix to reduce impacts to vegetation. 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. Existing horizontal lines (i.e., drill roads) are currently located in the Project Area. Therefore, additional horizontal and shallow diagonal lines from drill roads constructed as part of the Proposed Action would result in a few additional 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.

Drilling could occur 24 hours per day and could occur in any part of the Project Area. Drilling during the night would require the use of lights around each drill rig. As stated in the Proposed Action (Section 2.1.11), WEDC would utilize directional lighting with shields allowing the drill crew to carry out its duties in a safe manner while isolating and minimizing the glow of light that would be seen from a distance. The effects of any remaining light after application of the environmental protection measure, would be temporary, lasting the life of the Project.

4.1.14 Wildlife

Direct impacts to wildlife would consist of temporary habitat loss and disturbance from human activity and noise. Approximately 250 acres of existing wildlife habitat would be temporarily impacted by exploration activities over a ten-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 only two drill rigs and their associated support equipment would be operating at any one time, allowing wildlife to move around and between Project activities. Concurrent reclamation would occur throughout the Proposed Action. Final 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 due to of Project-related surface disturbance. Potential impacts to habitat would be minimized following reclamation and revegetation.

Big Game

Any disturbance to mule deer and pronghorn antelope would likely be limited to temporary auditory and/or visual perturbation of individuals in or near the Project Area. Individual mule deer and pronghorn antelope 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. Concurrent reclamation would reduce impacts to big game forage and habitat in the Project Area.

Impacts to bighorn sheep within the Project Area could result in auditory and/or visual perturbation of individuals in or near the Project Area. The Project Area has been identified as a bighorn sheep lambing area and potential impacts to bighorn reproductive activities could occur. The environmental protection measures (Section 2.1.11) limits Project drilling activities between May 1 and June 30; therefore, direct impacts to bighorn sheep lambing is not expected.

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, pronghorn antelope, and bighorn sheep habitat are not expected to be greatly altered by Project implementation. Potential impacts to mule deer movement between Horse Creek and Thacker Pass could occur as a result of the Proposed Action. These impacts could result in disruption or alteration of mule deer movement. A minor increase in traffic would occur; however, the likelihood of deer/antelope/sheep-vehicle collision is considered low.

4.2 No Action Alternative

Under the No Action Alternative, none of the impacts associated with the Proposed Action would occur. However, ongoing uranium exploration activities currently permitted in the Project Area, which are similar to those described for the Proposed Action would result in impacts similar to those associated with the Proposed Action. Up to five acres under each Notice could be disturbed or redisturbed in the Project Area for a total of ten acres of surface disturbance associated with the No Action Alternative.

4.2.1 Air Quality

The No Action Alternative could include disturbance of up to ten 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 and roads within the Project Area would be observed. 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 NRHP eligible sites and/or contributing elements of NRHP eligible sites would be avoided by Notice-level activities.

4.2.3 Invasive, Nonnative Species

The No Action Alternative could include disturbance of up to ten acres on public land. 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 disturbance of up to ten 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 up to ten 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 within ephemeral drainages as a result of this alternative would be similar to the Proposed Action and could include spills and sedimentation from surface disturbance under the Notices. 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 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 is not expected to overlap with rangeland improvements, including the fence line or pipeline, located in the Project Area. Therefore, no impacts to rangeland improvements are expected as a result of the No Action Alternative.

4.2.8 Social Values

Under the No Action Alternative, uranium exploration would occur on ten acres of BLM-administered land. Uranium occurs naturally in the Project Area. Exploration would consist of

drilling a hole in the ground, removing a portion of the material from the hole to a location off site for detailed chemical analysis, plugging the hole, and burying any drill cuttings left at the surface. No impacts to social values or public safety are expected as result of the Proposed Action.

4.2.9 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 community of 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 to the Proposed Action.

4.2.10 Soils

Under the No Action Alternative, none of the impacts associated with the Proposed Action would occur; however, ongoing activities currently permitted in the Project Area would continue to occur and may impact soils. Approximately 4.2 acres of Notice-level surface disturbance would occur in the Soughe-Rubble soil association, 0.06 acre of Notice-level surface disturbance would occur in the Zevandez-McConnel soil association, and 0.11 acre of Notice-level surface disturbance would occur in the Eaglerock-Acrelane soil association. The final acre of surface disturbance could occur within any of the soil associations located in the Project Area.

Soughe-Rubble and Eaglerock-Acrelane soils are associated with a slight susceptibility to erosion and Zevandez-McConnel soils are associated with a moderate susceptibility to erosion, respectively. The majority of Notice-level surface disturbance would occur in the Soughe-Rubble association, which has a slight level of susceptibility to erosion. 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, 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 proportionally 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 ten 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 disturbance of up to ten 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 ten acres of vegetation in the big sagebrush vegetation community. 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 disturbance of up to ten 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 disturbance of up to ten 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 up to ten 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; 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 the occupied NDOW-identified bighorn sheep habitat and the Lone Willow Greater Sage-Grouse PMU (Figure 5.1.1).

The Hydrology CESA is identified as a portion of the subwatershed that overlies the Project Area and encompasses 23,633 acres (Figure 5.1.1). Initially, the Hydrologic Unit Code (HUC) 5 watershed (Kings River) was evaluated for applicability. Based on this review the ID team determined that only that portion of the watershed located east of Kings River Road and coincident with the PMU boundary was 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 invasive, nonnative species. Table 5.1-1 outlines the CESA area by resource.

Figure 5.1.1: Cumulative Effects Study Areas

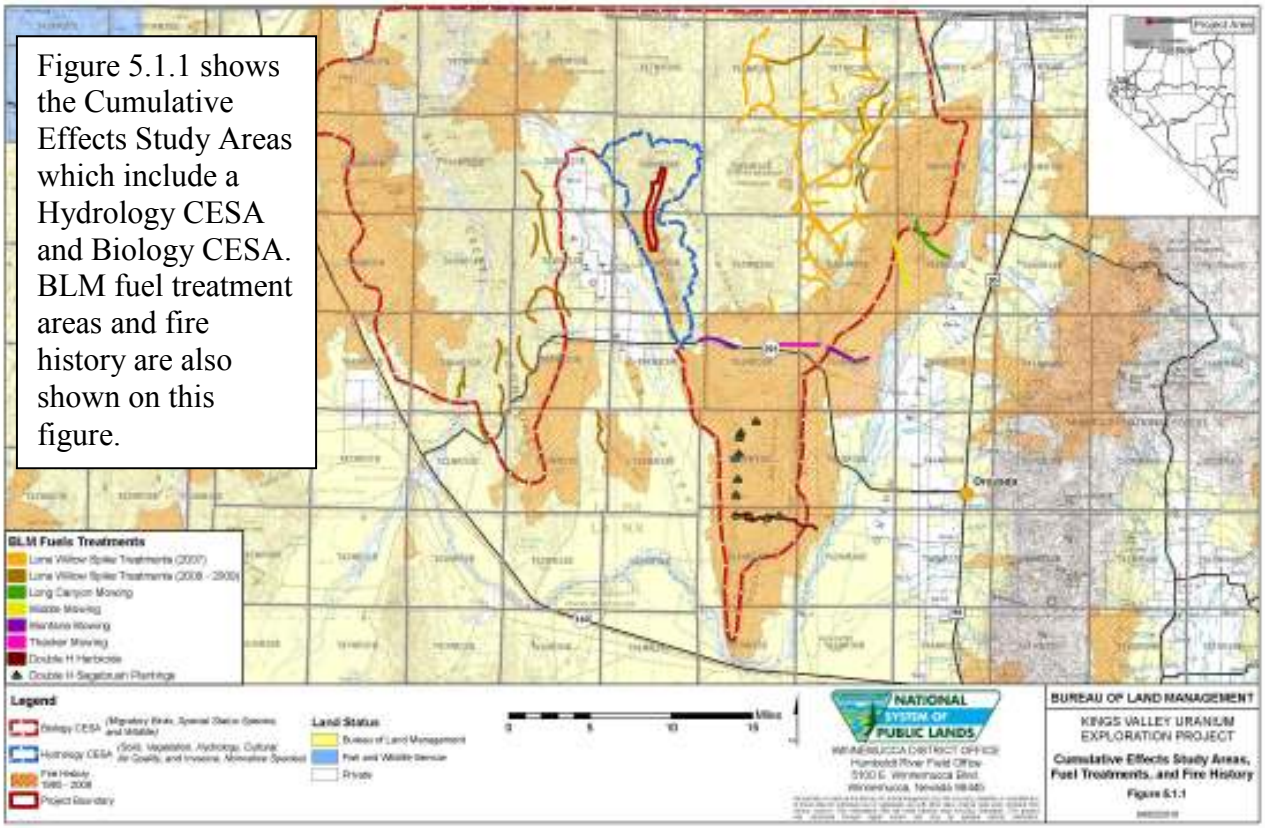


Table 5.1-1: Cumulative Effects Study Areas

Resource	Cumulative Effects Study Area	CESA Name	CESA Size (acres)
Special Status Species, Wildlife, Migratory Birds	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	23,633

5.2 Past and Present Actions

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

Past and present actions in the Biology CESA include the following: aggregate operations; minerals exploration; mining; livestock grazing; rangeland improvements; ROWs; land exchange; land sales; land acquisitions; fuels treatments; wildland fire; transportation networks; and dispersed recreation.

Aggregate Operations

There are 40 acres associated with a community materials site in the Hydrology CESA and in the Biology CESA.

Mineral Exploration and Mining

Chevron Minerals, Anaconda, and other operators conducted exploration and small-scale mining activities in and around the Project Area that resulted in surface disturbances and numerous roads. Aerial photographs and historical documents indicate that the majority of the work was completed by the late 1970s.

Approximately five acres of surface disturbance associated with lithium exploration are located within the Hydrology CESA. Additionally, there are approximately 15 acres of surface disturbance authorized for two projects associated with mineral commodities in the Biology CESA.

Livestock Grazing and Rangeland Improvements

Six grazing allotments are located within the Hydrology CESA. These allotments are administered by the BLM HRFO and include the Horse Creek, Jordan Meadow, Crowley Creek, Pole Creek, Kings River, and Little Horse Creek Allotments. Details for the Horse Creek Allotment which is the allotment that overlaps with the Project Area are included in Section 3.8.

In addition to the six aforementioned allotments, 15 additional allotments are located in the Biology CESA. The size of each allotment is listed in Table 5.2-1.

Table 5.2-1: Allotments Located within the Biology CESA

Allotment Name	Managed By (BLM Field Office)	Size (acres)
Bilk Creek	Humboldt River	40,999
Coyote Hills	Humboldt River	38,315
Double H	Humboldt River	47,275
Grassy Basin	Burns	7,411
Happy Creek	Humboldt River	95,126
Horse Creek	Humboldt River	39,866
Jordan Meadow	Humboldt River	106,494
Kings River	Humboldt River	144,211
Little Horse Creek	Humboldt River	3,843
McDermitt Creek	Vale	3,080
Sand Hills	Burns	12,614
Sod House	Humboldt River	21,012
Washburn	Humboldt River	31,458
Wilder-Quinn	Humboldt River	188,166
Zimmerman	Vale	32,730

Rangeland improvements in the Hydrology CESA include the following: six developed springs; three reservoirs; two troughs; 34,267 feet of allotment fence; 11,190 feet of private fence; 37,060 feet of fence; and 6,865 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 4,350 acres within the Hydrology CESA and 174,194 acres in the Biology CESA between 1985 and 2006 (Figure 5.1.1).

BLM treatments within each of the CESAs include fuel related treatments, including aerial seeding, drill seeding, burns, herbicide treatments, mowing, road maintenance, and planting. Fuels treatments in the CESAs are shown on Figure 5.1.1.

Fuels treatments within the Hydrology CESA include the following: 2,773 acres of aerial seeding; 107 acres of drill seeding; and 241 acres of natural recovery.

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.

Transportation Networks

Approximately 688 feet of SR 293 are located within the Hydrology CESA, and approximately 18.1 miles of SR 293 are located within the Biology CESA. There are also approximately 35 miles of authorized roads in the Hydrology CESA and approximately 524 miles of authorized roads in the Biology CESA. These roads are located primarily within the valleys of the CESAs. Road maintenance, including grading, graveling, and paving occurs on all of these roads.

Rights-of-Ways (ROWs)

Five ROWs, one associated with a federal highway, two associated with power transmission lines, and two associated with telephone lines, 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 exchange consisting of 5,725 acres is located in the Biology CESA. 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 that would continue to occur in the Hydrology CESA include the following: mineral exploration; livestock grazing; fuels treatments; wildland fire; transportation networks; ROWs; and dispersed recreation.

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

Reasonably foreseeable future actions (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 and April 2010).

Three potassium prospecting permits are proposed for the Hydrology CESA and an additional six are proposed for the Biology CESA. The nine prospecting permits total 18,561 acres of surface disturbance.

In the Biology CESA, Western Lithium Corporation has proposed lithium exploration located approximately ten miles southeast of the Project Area. The proposed project would disturb a maximum of 75 acres in phases over a ten-year period and include disturbance from drill sites, sumps, constructed roads, monitoring wells, 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 exclosure is a pending project located in the Biology CESA and would consist of approximately two miles of fence and encompass approximately 160 acres. A Grazing Permit Renewal is currently pending for the Horse Creek, Little Horse Creek, and Double H Grazing Allotments, which are located in the Biology CESA. Livestock grazing is expected to continue at current levels while the Grazing Permit Renewal is being completed. After the completion of the Grazing Permit Renewal, grazing may continue at current levels or changes may be made at that time.

Continuation of Past and Present Actions

Recreation in the planning area is expected to increase an average of five percent per year (BLM 2005).

5.4 Cumulative Impacts

5.4.1 Air Quality

Relevant CESA: The CESA for air quality is the Hydrology CESA which covers 23,633 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, aggregate operations, 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, transportation networks, 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 from the Proposed Action: 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.

Cumulative Impacts from the No Action Alternative:

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. 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.

5.4.2 Invasive, Nonnative Species

Relevant CESA: The CESA for invasive, nonnative species is the Hydrology CESA which covers 23,633 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, fuels treatments, aggregate operations, wildland fire, transportation networks, and dispersed recreation. Surveys did not locate noxious weeds in the Project Area; however, invasive, nonnative species (i.e., cheatgrass, Russian knapweed, perennial pepperweed, salt cedar, and whitetop) are present in the Hydrology CESA.

RFFAs: Potential impacts from invasive, nonnative species as a result of mineral exploration, livestock grazing, fuel 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 from the Proposed Action: 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 (250 acres) would impact 1.06 percent of the CESA (23,633 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 2.1.11 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.

Cumulative Impacts from the No Action Alternative:

Cumulatively, the past, present, and RFFAs would result in potential impacts from invasive, nonnative species 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.

5.4.3 Migratory Birds, Special Status Species, and Wildlife

Relevant CESA: The CESA for migratory birds, special status species, and general wildlife is the Biology CESA which covers 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, mining, aggregate operations, livestock grazing, ROWs, a 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 20 acres (or approximately 0.001 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.

Within the Biology CESA there are portions of 21 allotments. Grazing has modified vegetation, and thus modified the migratory bird, special status species, and wildlife habitat throughout the CESA. Improvements to habitat associated with exclosures have occurred in the Biology CESA.

RFFAs: Potential impacts to migratory birds, special status species, and wildlife from mineral exploration, livestock grazing, fuels treatments, ROWs, transportation networks, dispersed recreation, or loss of habitat associated with potential wildland fires and fuel 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.

Cumulative Impacts from the Proposed Action: 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, destruction of habitat (250 acres), noise associated with exploration, and vehicular collisions. The Proposed Action (250 acres) would impact 0.05 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.

Cumulative Impacts from the No Action Alternative:

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.

5.4.4 Water Quality

Relevant CESA: The CESA for water resources is the Hydrology CESA which covers 23,633 acres.

Past and Present Actions: Past actions that are likely to have impacts to surface water would have included mineral exploration, mining, livestock grazing, rangeland improvements, aggregate operations, ROWs, fuels treatments, wildland fire, transportation networks, and dispersed recreation. Vegetation has stabilized previous burns, from natural revegetation, seeding treatments, and establishment of annual species

RFFAs: Potential impacts to surface water quality could result from mineral exploration, livestock grazing, fuels treatments, wildland fire, transportation networks, ROWs, and dispersed recreation. However, the mineral activities would be required to have spill prevention plans, handle hazardous substances in accordance with NDOT and NDEP, adhere to NAC 534.4369 and 534.4371 for borehole drilling and plugging, 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.

Cumulative Impacts from the Proposed Action: The Proposed Action (250 acres) would impact 1.06 percent of the CESA (23,633 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.

Cumulative Impacts from the No Action Alternative:

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.

5.4.5 Soils

Relevant CESA: The CESA for soils is the Hydrology CESA which covers 23,633 acres.

Past and Present Actions: Past actions that could have impacted soils would have included mineral exploration, mining, livestock grazing, rangeland improvements, aggregate operations, ROWs, 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.

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

Cumulative Impacts from the Proposed Action: The Proposed Action (250 acres) would impact 1.06 percent of the CESA (23,633 acres). The potential impacts from the Proposed Action would be minimized due to the implementation of environmental protection measures outlined in

Section 2.1.11 and concurrent reclamation. As a result, a minimal incremental impact to soils in the Hydrology CESA is expected.

Cumulative Impacts from the No Action Alternative:

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.

5.4.6 Vegetation

Relevant CESA: The CESA for vegetation is the Hydrology CESA which covers 23,633 acres.

Past and Present Actions: Past and present actions that could impact vegetation would include livestock grazing, rangeland improvements, aggregate operations, ROWs, transportation networks, and dispersed recreation that utilized, impacted or reduced vegetation. Vegetation loss was also associated with wildland fire and fuels treatments. Although vegetation is reduced to implementation of fuel treatments, overall impact to vegetation would be reduced as fuelbreaks would prevent the spread of wildland fire.

Within the Hydrology CESA there are portions of six 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 livestock grazing, fuel treatments, transportation networks, ROWs, dispersed recreation, or loss of vegetation associated with wildland fires could occur. Fuel treatments would serve to protection vegetation from wildland fire.

Cumulative Impacts: The Proposed Action (250 acres) would impact 1.06 percent of the CESA (23,633 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.

Cumulative Impacts from the No Action Alternative:

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 3.7.1) within the Project Area in planning for the phased drilling, and should unintentional impacts occur to any range improvement by WEDC, WEDC should repair the improvement.

Section 2.1.11 outlines environmental protection measures that WEDC has committed to implementing as part of the Proposed Action.

Wildlife

- If Project-related surface disturbance (i.e., vegetation removal, road construction, drilling) would occur during the raptor nesting season, a survey for active raptor nests (with eggs or young) would be conducted by a qualified biologist. If present, active golden eagle (*Aquila chrysaetos*) nests would be avoided by an area one-half mile in radius from February 15 to July 1, or until the young are fledged, of each year the nest is active. If present, active prairie falcon (*Falco mexicanus*) nests would be avoided by an area 0.25 mile in radius from April 1 to July 1, or until the young are fledged, of each year the nest is active. The results of the nesting raptor survey would be reported to the BLM Biologist.

- 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 (with eggs or young). 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 (including raptor 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.

- If possible, WEDC would avoid exploration drilling between March 15 and May 15 to protect greater sage-grouse lekking activity. However, if avoidance is not possible during this time period, WEDC would avoid drilling from one hour before sunrise until noon between March 15 and May 15. WEDC would begin drilling from sites located furthest from known leks sites (see figure 3.7.1 for lek avoidance area) to protect greater sage-grouse and their lekking activity.

- WEDC would avoid road construction and drilling activities between May 1 and June 30 to protect bighorn sheep during the lambing season.

- An open adit located at the Moonlight Mine has the potential to serve as sensitive bat species habitat. WEDC would avoid drilling within 600 feet of the Moonlight Mine adit year-round, unless a survey is conducted by a qualified bat biologist to determine whether the adit serves as sensitive bat species habitat. If a survey finds the adit does provide habitat for sensitive bat species, the restriction could be modified temporally so that the avoidance of 600 feet would apply only during the times of the year when the adit is utilized by sensitive bat species. If a survey finds the adit does not provide habitat for sensitive bat species, the 600-foot restriction may be lifted.

Cultural Resources

- WEDC would avoid all NRHP eligible sites and/or contributing elements of eligible cultural sites by a buffer zone of 100 feet. If eligible sites or contributing elements cannot be avoided, they would be 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 WEDC initiating activities under that phase to ensure the protection of all NRHP eligible sites and/or contributing elements of eligible sites. All travel along the Horse Creek Canyon road in the vicinity of CrNV-02-8590 would be restricted to the existing road bed and no heavy equipment would be driven or transported on this road in the vicinity of CrNV-02-8590.

- Pursuant to 43 CFR 10.4(g), WEDC 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.

Drilling Procedures

- New roads and drill sites would not be constructed within 50 feet of any spring or riparian scrub community (i.e., Calavera Canyon). BMPs would be followed for sediment control and would be utilized during construction, operation, and reclamation to avoid negative impacts to springs or 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 would be used in conjunction with the sediment sumps/traps so that the recirculating of drilling fluids can be maximized.

- All drill holes would be plugged prior to the drill rig moving from the drill site in accordance with NRS 534 and NAC 534.4369 and NAC 534.4371 with the exception of drill holes collared with a reverse-circulation drill rig for completion with a core rig. Drill holes completed with a core rig would be plugged prior to the core rig moving from the drill site. In the unlikely event that any drill hole produces artesian flow, the drill hole would be contained pursuant to NRS 534.060 and NAC 534.378 and would be sealed by the method described in Subsection 2 of NAC 534.4371. If casings are set in a drill hole, either the drill hole must be completed as a well and plugged pursuant to NAC 534.420 or the casings would be completely removed and the drill hole would then be plugged according to NAC 534.4369 and NAC 534.4371.

- In accordance with Joint Agency Guidelines for Uranium Exploration Drilling Reclamation June 26, 2007, by the New Mexico Mining and Minerals Division, BLM, and USFS, WEDC would provide documentation (including maps) of radiation readings pre-disturbance/background, during disturbance, and then post-disturbance. Pre-disturbance readings would be considered background and the data used as a reclamation standard for any necessary radiation cleanup for the site.

    - Gamma ray emissions would be utilized as the basis for establishing the background standard. Readings would be taken one meter above the ground at the staked drill hole location. All radiation measuring devices would be calibrated annually. The readings would be taken unshielded with a Ludlun microR or similar gamma radiation measuring device.

- Dry holes would be backfilled with cuttings or clean native fill or other approved materials and then installation of a nonmetallic plug ten feet below the surface and backfilled with concrete to within one foot of ground surface. The remaining hole would be filled with native soil/material.

- Within 30 days wet holes would be filled from the bottom up using a tremie (i.e., funnel), and the well would be plugged with neat cement slurry, bentonite base material, or other sealing material approved by the State of Nevada.

- Drill cuttings would be contained and drilling fluids managed. All sumps would be backfilled at the end of each drilling season.

- All core and cuttings that show radioactive readings in excess of background readings would be buried with clean native soil or other acceptable soil/material and covered with no less than three feet of soil to bring radiation levels back to background levels. If bedrock is located at the site, then cuttings would be removed and relocated to an approved site and covered with a minimum of three feet of clean native soil or approved ground cover material.

- In the event that background radiation levels cannot be replicated with a three-foot cover, the following radiological standard for "uncontrolled access to mill tailings" would be utilized: a maximum of 12 micro Roentgen per hour above background radiation is acceptable if background radiation levels cannot be met through standard mitigation. (The above Joint Agency Guidelines for Uranium Exploration Drilling Reclamation reference states that the value of 12 micro Roentgen per hour has been determined to be a safe standard for mill tailings by the Nuclear Regulatory Commission [10 CFR Part 20, subpart D]).

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

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

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

- All unattended sumps would be adequately fenced to preclude access or ramped.
- Only nontoxic drilling products would be used in the drilling process.
- WEDC would follow the Spill Prevention Plan from Appendix D of the Plan.
- 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.
- Any survey monuments, witness corners, or reference monuments would be protected to the extent economically and technically feasible.
- All solid wastes would be 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.

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.

Noxious Weeds

- 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.

Air Quality

- Emissions of fugitive dust from disturbed surfaces would be minimized by utilizing appropriate control measures. Surface application of water from a truck is the current method of dust control during high wind conditions. Speeds would be limited to 15 miles per hour on the unpaved roads to control dust.

Visual

- WEDC would utilize directional lighting with shields for Project activities at night in order to minimize visual impacts in the Project Area.

Monitoring measures are included as part of the Proposed Action. WEDC is a cooperating partner with Western Lithium Corporation and the NDOW in bighorn sheep satellite collaring and monitoring.

6.2 No Action Alternative

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

7 LIST OF PREPARERS

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Chet Van Dellen	GIS Data Management/Figure Production
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Sara Thorne	Wildlife
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8 CONSULTATION AND COORDINATION

Tribal Consultation

The BLM contacted the Fort McDermitt Paiute and Shoshone Tribe by letter on November 14, 2008. Fort McDermitt Tribal Chairman Dale Barr informed the BLM that a sacred site was identified within the vicinity of the Project Area. In a telephone conversation with BLM archaeologist Peggy McGuckian on September 1, 2009, Peggy McGuckian informed Fort McDermitt Tribal Chairman Dale Barr that the Project does not propose to impact the sacred site. Consultation with the Fort McDermitt Tribe on the Project is ongoing.

9 PUBLIC INVOLVEMENT

A scoping letter was posted on the BLM's website and sent to potentially interested parties by the BLM on February 27, 2009, and six responses were received.

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