

**Uranium Leasing Program
Mitigation Action Plan for the
Final Uranium Leasing Program
Programmatic Environmental
Impact Statement DOE/EIS-0472**

November 2014



U.S. DEPARTMENT OF
ENERGY

Legacy
Management

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Contents

Abbreviations	ii
1.0 Introduction	1
2.0 Background	1
3.0 Discussion	2
4.0 Monitoring the Mitigative Measures	3
5.0 Evaluating the Effectiveness of the Mitigative Measures	3
6.0 Annual Reporting	3
7.0 Public Involvement	3
8.0 References	4

Table

Table 1. Identified Mitigative Measures	5
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Appendix

Appendix A Specific Requirements and Stipulations (Appendix C of Lease Agreement)	
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Abbreviations

CFR	<i>Code of Federal Regulations</i>
DOE	U.S. Department of Energy
LM	Office of Legacy Management
MAP	Mitigation Action Plan
NEPA	National Environmental Policy Act
PEIS	Programmatic Environmental Impact Statement
ROD	Record of Decision
ULP	Uranium Leasing Program

1.0 Introduction

Title 10 *Code of Federal Regulations* Section 1021.331 (10 CFR 1021.331), “Mitigation Action Plan,” requires the U.S. Department of Energy (DOE) to prepare a Mitigation Action Plan (MAP) that addresses mitigation commitments expressed in the Record of Decision (ROD); as such, the MAP must be prepared following the completion of an Environmental Impact Statement and its associated ROD. The objective of a MAP is to explain how mitigation measures (i.e., methods designed to mitigate potential adverse environmental impacts associated with the course of action directed in the ROD) will be planned and implemented. The DOE Office of Legacy Management (LM) issued the *Final Uranium Leasing Program Programmatic Environmental Impact Statement* (PEIS) (DOE/EIS-0472) in March 2014 and issued the associated ROD on May 6, 2014; the ROD was published in the *Federal Register* on May 12, 2014. This MAP addresses the mitigation commitments in the ROD.

2.0 Background

LM administers the DOE Uranium Leasing Program (ULP), which encompasses approximately 25,000 acres in 31 lease tracts in southwestern Colorado. The lease tracts were established to ensure a readily available domestic source of uranium and vanadium ores. LM recently completed a PEIS for the ULP and issued a ROD that supports the continuation of the ULP for the 31 lease tracts for an additional 10-year period. Through the PEIS process, LM determined that the continuation of the ULP will result in environmental impacts that range from negligible to moderate. LM also identified a series of mitigative measures in the PEIS and briefly summarized them in the ROD; those measures will be implemented to further reduce, minimize, or avoid these environmental impacts entirely. Table S.5-1 in the PEIS Summary outlines the measures that were identified to minimize potential impacts from uranium mining at the ULP lease tracts. Table 4.6-1 in Section 4 of the PEIS contains the same information.

This MAP, prepared in accordance with 10 CFR 1021.331, is a programmatic template that documents how LM will plan, implement, and monitor the mitigative measures outlined in the final PEIS. As stated in the ROD, the following mitigative measures will address potential impacts to human health, transportation, and the various environmental resources:

- Reduce dust emissions
- Identify and protect cultural, historical, and paleontological resources
- Protect soil from erosion
- Minimize the extent and amount of ground disturbance
- Restore the original grade and reclaim soil and vegetation
- Protect wildlife and wildlife habitats
- Minimize lighting to offsite areas
- Protect human health by minimizing radiological exposure
- Ensure the safe and proper transport of generated ore

3.0 Discussion

Table S.5-1 in the PEIS Summary identified a total of 120 “measures” that were further categorized as compliance measures (i.e., those contained within regulatory requirements), mitigation measures, and best management practices. A subsequent, more detailed analysis of the measures resulted in the reclassification of two best management practices as mitigation measures and of one mitigation measure as a compliance measure. Accordingly, this MAP includes detailed discussions of the resulting mitigative measures that were identified (see Table 1).

As the ULP moves forward during the next 10-year period, the lessee will be required to submit the plans for their proposed activities to LM for review and approval. Such plans will provide the specific details concerning their proposed activities (exploration, mining, or reclamation). LM will review each plan in accordance with the commitments made by LM in the PEIS, the ROD, and the lease stipulations. See pages S-17 and 1-45 of the PEIS for specific details of LM’s commitments. Additionally, the lessee will support LM in the preparation of the required National Environmental Policy Act (NEPA) document to assess the impacts associated with the lessee’s proposed activities. This NEPA document will identify the site-specific mitigative measures needed to minimize the environmental impacts. Once LM has approved the NEPA document and the lessee’s plan, a separate, lease-tract-specific MAP will be prepared. Table 1 will be used as the template for a lease-tract-specific MAP. This lease-tract-specific MAP will be prepared before any action that is subject to mitigation is taken on the tract and will include only the mitigative measures that are applicable to and appropriate for the lessee’s activities. Any additional measures specific to the lessee’s proposed activities will also be incorporated into the associated MAP. Appendix C, “Specific Requirements and Stipulations,” of each lease agreement was revised to incorporate the environmental requirements to adequately address each of the mitigative measures. A copy of Appendix C is included as Appendix A of this MAP.

As noted earlier, the information contained in Table 1 was compiled to outline specific strategies that will be used to complete the nine mitigative measures listed in the ROD. The columns serve the following functions:

- Column 1 provides the mitigative measure description that was identified in the PEIS.
- Column 2 describes the strategy for implementing the mitigative measure.
- Column 3 identifies the phase(s) of the lessees’ activities (i.e., plan development, mining, reclamation, or operations [which is inclusive of plan development, exploration, mining, and reclamation]) associated with the mitigative measure.
- Column 4 identifies the parties responsible for implementation.
- Column 5 identifies the parties responsible for approval or enforcement.
- Column 6 specifies the monitoring frequency for the implementation of each mitigative measure.
 - Note that no monitoring frequency is currently presented in Column 6 of the template. The monitoring frequency may be different for each lease tract; accordingly, the monitoring frequency will be identified on the lease-tract-specific MAPs. LM will routinely monitor the lessees’ activities to document the lessees’ adherence to the lease-tract-specific MAPs.
- Column 7 will be used to document the completion date of the mitigative activities.

4.0 Monitoring the Mitigative Measures

Subsequent to LM's approval of the lessees' plans, LM will conduct informal and formal inspections to monitor the lessees' activities to verify that the mitigative measures are completed in accordance with the lease-tract MAP and lease stipulations.

The results of LM's monitoring activities will be documented in a manner that will adequately support LM's annual reporting requirements.

5.0 Evaluating the Effectiveness of the Mitigative Measures

As part of monitoring the lessee's activities, LM will evaluate whether the lessee is complying with the lease-tract-specific MAPs. If the lessee is not complying with the mitigative measures identified in the MAP, then LM personnel will evaluate the situation and determine an appropriate corrective action, up to and including termination of the lease agreement and forfeiture of the lessee's financial warranty in accordance with lease stipulations.

LM will also periodically assess the mitigative measures being implemented by the lessee to determine their overall effectiveness. If LM determines that the measures are not performing as expected, LM will work with the lessee to analyze the situation and implement appropriate alternative measures.

6.0 Annual Reporting

On an annual basis, LM shall prepare a comprehensive summary of the lessees' activities to demonstrate the progress that was made and the effectiveness of the mitigative measures that were implemented. This annual summary report will inform LM management; federal, state, and local agencies; and the interested public of the status of the lessees' activities as they relate to the lease-tract-specific MAPs. After LM finalizes the report, it will be made available for public review. In addition to this report, LM will report the status of any ongoing MAPs in the DOE annual NEPA planning summary, which is an annual report provided to the DOE Office of the General Counsel.

7.0 Public Involvement

This MAP, subsequent lease-tract-specific MAPs, and the associated annual monitoring reports shall be made available for public review at the following websites:

- <http://energy.gov/lm/services/property-management/uranium-leasing-program>
- <http://energy.gov/nepa/nepa-documents/document-status-schedules/annual-planning-summaries>
- <http://energy.gov/nepa/nepa-documents/mitigation-action-plans-map-and-related-documents>

8.0 References

APLIC (Avian Power Line Interaction Committee), 2006. *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*, Edison Electric Institute, APLIC, and the California Energy Commission, Washington, DC, and Sacramento, California, [http://www.aplic.org/uploads/files/2643/SuggestedPractices2006\(LR-2\).pdf](http://www.aplic.org/uploads/files/2643/SuggestedPractices2006(LR-2).pdf)

APLIC (Avian Power Line Interaction Committee) and USFWS (U.S. Fish and Wildlife Service), 2005. *Avian Protection Plan (APP) Guidelines*, http://www.aplic.org/uploads/files/2634/APPguidelines_final-draft_Apr12005.pdf

Table 1. Identified Mitigative Measures

Mitigative Measure Description	Strategy for Implementing Mitigative Measure (References are to Appendix C of the lease agreement [attached as Appendix A])	Activity Phase	Party Responsible for Implementation	Party Responsible for Approval or Enforcement	Monitoring Frequency	Date Completed
No. 1: Reduce dust emissions	Wheeled or tracked vehicles and existing roads shall be used when practicable to limit soil disturbance. Operations shall be conducted to minimize the potential for dust or other emissions that might degrade air quality [Appendix C, (i) and (j)].	Operations	Lessee	LM		
	If chemical dust suppressants are required, chemicals shall be applied in accordance with applicable laws and regulations. No dust-suppressant chemicals shall be applied to areas adjacent to streams or to areas that could release to streams [Appendix C, (j)].	Operations	Lessee	LM		
No. 2: Identify and protect cultural, historic, and paleontological resources	The lessee shall consult with the applicable U.S. Bureau of Land Management (BLM) field offices to determine whether areas of moderate-to-high fossil-yield potential (i.e., Probable Fossil-Yield Classification 3, 4, or 5) or known significant localities containing paleontological resources occur or might occur within proposed areas of disturbance. The lessee shall also consult with the applicable BLM field office to identify whether surveys, sampling, or the development of a paleontological resources management plan is required [Appendix C, (g)].	Plan development	Lessee	LM and BLM		
	Prior to any surface-disturbing activity, the lessee shall perform cultural and historic surveys of the proposed area of disturbance and provide the results of such surveys to LM and BLM. If cultural or historic resources are found to exist, the lessee shall consult with LM, BLM, and the State Historic Preservation Officer to determine the appropriate measures to take. If required, the lessee shall prepare a mitigation plan to address the protection of the cultural or historic resources [Appendix C, (g)].	Plan development and operations	Lessee	LM, BLM, State Historic Preservation Officer		
	If antiquities or other objects of historic or scientific interest, including but not limited to historic or prehistoric features or ruins, artifacts, vertebrate fossils, or other paleontological resources, are discovered by the lessee during the performance of operations under this lease, the lessee shall cease operations in the vicinity, notify LM and BLM of such discovery, and immediately take appropriate steps to protect and save such objects of historic or scientific interest [Appendix C, (n)].	Operations	Lessee	LM and BLM		
No. 3: Protect soil from erosion	Mining operations shall be planned to avoid creating or impacting steep slopes as practicable. If avoidance is not possible, cut-and-fill construction or other techniques will be used to minimize impacts to the slopes. Properly designed and sized culverts shall be installed in drainages, as necessary, for access. Broad, shallow drainages shall be crossed with minimal disturbance to the banks [Appendix C, (i) and (j)].	Plan development and operations	Lessee	LM		
	To minimize new disturbance to soils, borrow materials shall be obtained from sources approved by LM and BLM [Appendix C, (l)].	Reclamation	Lessee	LM and BLM		
	Drainages and wetlands shall be protected through the use of barriers, berms, diversion structures, and sedimentation devices [Appendix C, (l)].	Operations	Lessee	LM		
	The lessee shall plug open drill holes and areas around vent shafts, to the extent possible, to reduce the volume of groundwater entering an underground mine during operations. Underground sumps shall be used to contain water flow, as needed. Water shall be pumped from underground seepage to redirect water flow, if necessary, into surface mine-water treatment ponds [Appendix C, (m) and (u)].	Operations	Lessee	LM		
	New access roads shall be constructed to meet applicable standards and shall be designed in accordance with their intended function [Appendix C, (i)].	Operations	Lessee	LM		

Table 1 (continued). Identified Mitigative Measures

Mitigative Measure Description	Strategy for Implementing Mitigative Measure (References are to Appendix C of the lease agreement [attached as Appendix A])	Activity Phase	Party Responsible for Implementation	Party Responsible for Approval or Enforcement	Monitoring Frequency	Date Completed
No. 4: Minimize the extent and amount of ground disturbance	The lessee shall use existing roads and disturbed areas (and transportation rights-of-way) to the extent possible before constructing new roads or disturbing new areas [Appendix C, (i)].	Operations	Lessee	LM		
	Mining activities shall avoid clearing and disturbing sensitive areas (e.g., steep slopes and natural drainages) to minimize the potential for erosion [Appendix C, (i)].	Operations	Lessee	LM		
	The lessee shall minimize disturbance to vegetation, soils, drainage channels, and stream banks during exploration and operational activities [Appendix C; (l), (j), and (k)].	Operations	Lessee	LM		
	The lessee shall undertake interim restoration during the operating life of the mine and as soon as practicable after disturbances occur [Appendix C, (k) and (l)].	Operations	Lessee	LM		
	Activities at previously mined sites shall be restricted so that they do not further encroach on perennial streams (e.g., the Dolores River); new mining activities shall not be allowed within 0.25 mile (0.40 kilometer) of perennial streams and shall consider cumulative impacts associated with other projects also occurring in the vicinity. Necessary measures shall be implemented for the protection of human health and the environment. The lessee shall avoid placement of facilities or roads in drainages and shall make necessary accommodations for the disruption of runoff [Appendix C, (t)].	Mining	LM	LM		
	The lessee shall locate ore-storage and waste-rock piles on topographically high ground so that they do not come into direct contact with flowing or ponded water. The ore-storage area shall be graded and constructed with an earthen berm to prevent further ground disturbance. Runoff shall be diverted from the area to a sedimentation pond for testing and treatment [Appendix C, (j)].	Mining	Lessee	LM		
No. 5: Restore the original grade and reclaim soil and vegetation	The lessee shall salvage and stockpile surface soil and vegetation for use in site reclamation [Appendix C (i), (k)].	Operations	Lessee	LM		
	Disturbed areas shall be returned to the original grade and drainage pattern, as practicable, prior to final reclamation [Appendix C, (k) and (l)].	Reclamation	Lessee	LM and BLM		
	Stockpiled topsoil shall be placed over disturbed areas and seeded with an approved seed mix [Appendix C, (l)].	Reclamation	Lessee	LM		
	The lessee shall grade mine waste-rock or tailings piles to create a gently sloping (more stable) surface [Appendix C, (l)].	Reclamation	Lessee	LM and BLM		
	Soil-borrow areas, cut-and-fill slopes, berms, water bars, and other disturbed areas shall be recontoured to approximate naturally occurring slopes [Appendix C, (l)].	Reclamation	Lessee	LM and BLM		
No. 6: Protect wildlife and wildlife habitats	Activities shall either be scheduled to avoid critical winter ranges for big game (e.g., mule deer and elk) or agreed-upon mitigation (e.g., habitat enhancement or replacement) shall be identified to offset long-term displacement of big game from critical winter ranges. Compensatory mitigation may be developed in coordination with Colorado Parks and Wildlife (CPW) or with another applicable state or federal land manager [Appendix C, (f)].	Operations	Lessee	LM, BLM, U.S. Fish and Wildlife Service (USFWS), CPW		
	Conduct pre-disturbance surveys for threatened, endangered, and sensitive species within all areas that might be disturbed by mining activities. These surveys will be used to determine the presence of sensitive species on the lease tracts and to develop the appropriate measures to avoid, minimize, or mitigate impacts on these species. If sensitive species are located in the area that might be developed, coordination with USFWS and CPW to determine the appropriate species-specific measures will be necessary [Appendix C, (f)].	Plan development	Lessee	LM, BLM, USFWS, CPW		
	Soil borings, mine entrances, and travel routes shall be located to avoid important, sensitive, or unique habitats, including, but not limited to, wetlands, springs, seeps, ephemeral streams, intermittent streams, ponds and other aquatic habitats, riparian habitats, remnant vegetation associations, rare natural communities, and habitats supporting sensitive species populations as identified in applicable land-use plans or in the best available information and science [Appendix C, (f) and (j)].	Plan development and operations	Lessee	LM		

Table 1 (continued). Identified Mitigative Measures

Mitigative Measure Description	Strategy for Implementing Mitigative Measure (References are to Appendix C of the lease agreement [attached as Appendix A])	Activity Phase	Party Responsible for Implementation	Party Responsible for Approval or Enforcement	Monitoring Frequency	Date Completed
No. 6 (continued): Protect wildlife and wildlife habitats	If there are plans to conduct activities during bird breeding or nesting season, a nesting bird survey shall be conducted first. If active nests are detected, the nest area shall be flagged, and no activity shall take place near the nest (at a distance determined in coordination with BLM, CPW, and USFWS) until all birds have fledged or it is determined that the eggs will not hatch, or until applicable agencies agree that construction can proceed with the incorporation of agreed-upon monitoring measures. The timing of activities shall be coordinated with BLM, USFWS, and CPW [Appendix C, (f) and (g)].	Plan development and operations	Lessee	LM, BLM, USFWS, CPW		
	Reentry into existing mines that contain winter-roosting bats shall be avoided during the winter season (October 1 through April 15). Exclusion devices shall be installed in existing mines (i.e., those that will be reused) to prevent bats from using the mines during winter. Exclusions shall be installed by September 1 if possible, but no later than September 30 [Appendix C, (s)].	Operations	Lessee	LM, BLM, USFWS, CPW		
	Existing mines utilized as summer roosting sites (other than maternity roost sites) shall be avoided during the summer season of April 15 through September 1 [Appendix C, (s)].	Operations	Lessee	LM, BLM, USFWS, CPW		
	Any mine to be reworked that is used as a maternity roost shall undergo an exclusion effort by April 15, which shall be maintained from at least April 15 through June 15. In addition, the portal(s) shall be covered during the night to prevent the potential reuse as maternity sites. If a maternity roost might be permanently impacted, consideration shall be given to preserving nearby mine features, if possible, to serve as mitigation and as a possible alternate habitat for bats. This shall be done in consultation with CPW. This is also recommended as mitigation for a large winter roost site that will be permanently impacted. The creation of artificial bat habitat could also serve as an important alternative to mitigate impacts on maternity roosts or on large winter roost sites [Appendix C, (s)].	Operations	Lessee	LM, BLM, USFWS, CPW		
	Mining renewal activities shall occur during spring (April through May) or fall (September through October) for mine sites that are used year-round [Appendix C, (s)].	Operations	Lessee	LM, BLM, USFWS, CPW		
	The development and enactment of bat mitigation shall be coordinated with the Colorado Bat Working Group and CPW [Appendix C, (s)].	Operations	Lessee	LM, BLM, USFWS, CPW		
	Before mine entrances are closed during reclamation, a summer and winter bat survey, if required, shall be conducted to determine the number and species of bats that might potentially occupy a site. Depending on the results of the surveys, actions shall be undertaken that could include the installation of bat gates, provided such installation is consistent with minimizing the potential exposure of human receptors to radon. If bat surveys indicate that no bats are present, all mine openings shall be closed when mining activities are concluded and before bats have an opportunity to establish roosts or hibernacula [Appendix C, (s)].	Reclamation	Lessee	LM, BLM, USFWS, CPW		
	New mining and other surface-disturbing activities shall be excluded within 0.25 mile (0.40 kilometer) of the Dolores River to avoid impacts on the desert bighorn sheep movement corridor (and on other wildlife) [Appendix C, (f) and (t)].	Plan development	Lessee and LM	LM and BLM		
No. 6 (continued): Protect wildlife and wildlife habitats	If a transmission line is required, it shall be designed and constructed in conformance with Avian Protection Plan Guidelines (APLIC and USFWS 2005), in conjunction with Suggested Practices for Avian Protection on Power Lines (APLIC 2006), to reduce the operational and avian-related risks that result from avian interactions with electrical utility facilities. For example, transmission line support structures and other facility structures shall be designed to discourage their use by raptors for perching or nesting (e.g., through the use of anti-perching devices). This will also minimize the potential for the increased presence of ravens and raptors that might prey upon Gunnison sage-grouse. Shield wires shall be marked with devices that have been scientifically tested and found to significantly reduce the potential for bird collisions [Appendix C, (v)].	Operations	Lessee	LM		

Table 1 (continued). Identified Mitigative Measures

Mitigative Measure Description	Strategy for Implementing Mitigative Measure (References are to Appendix C of the lease agreement [attached as Appendix A])	Activity Phase	Party Responsible for Implementation	Party Responsible for Approval or Enforcement	Monitoring Frequency	Date Completed
	The lessee shall minimize the spread of invasive (vegetation) species by limiting disturbance to vegetation, soils, drainage channels, and stream banks that could encourage the spread of invasive species [Appendix C, (i)].					
	Mine planning shall include siting mine features to avoid impacts on important, sensitive, or unique habitats, including, but not limited to, wetlands (jurisdictional or nonjurisdictional), springs, seeps, streams (ephemeral, intermittent, and perennial), 100-year floodplains, ponds and other aquatic habitats, riparian habitats, remnant vegetation associations, rare or unique biological communities, crucial wildlife habitats, and habitats supporting sensitive species populations [Appendix C, (i) and (j)].	Plan development	Lessee	LM		
No. 7: Minimize lighting to offsite areas	When accurate color rendition is not required (e.g., for roadways or basic security), lighting shall be amber in color and shall consist of low-pressure sodium lamps, yellow LED lighting, or an equivalent [Appendix C, (j)].	Operations	Lessee	LM		
	The lessee shall ensure that lighting for structures on the mining sites does not exceed the minimum number of lights and brightness required for safety and security and does not cause excessive reflected glare [Appendix C, (j)].	Operations	Lessee	LM		
No. 8: Protect human health by minimizing radiological exposure	All mine openings shall be promptly and properly closed at the conclusion of mining activities to prevent unauthorized entry into the mine. Warning signs shall be installed if there is a potential for radiation exposures [Appendix C, (l)].	Operations	Lessee	LM		
	The lessee shall ensure that an adequate thickness of surface-soil material covers waste-rock piles before commencing seeding. The thickness of the surface-soil materials shall be adequate to prevent the exposure of underlying waste rocks over time. Modeling, monitoring, or both shall be used to evaluate measured uranium and decay product concentrations in waste rocks to determine whether the surface-soil thickness is sufficient to mitigate potential radiation exposures to human receptors [Appendix C, (l)].	Reclamation	Lessee	LM		
No. 9: Ensure the safe and proper transport of generated ore	The lessee shall ensure that uranium ore shipments proceed directly to the mill from the mine location. Locations shall be identified as potential "safe havens" for temporary wayside parking or storage in the event that there are unforeseen delays or scheduling issues associated with the mill [Appendix C, (p)].	Operations	Lessee	LM		
	The lessee shall ensure that mine and mill operators are aware of the routes used for shipments of uranium ore [Appendix C, (p)].	Operations	Lessee	LM		
	The Colorado State Highway Access Code recognizes the right of reasonable access, by development, to the state highway system, providing that the development mitigates traffic impacts on the highway at the point of access to the state highway. This also applies to the traffic generation and traffic impacts from the lease tracts in the ULP PEIS. As a measure to minimize potential traffic impacts due to the ULP proposed action, the lessee shall contact the Colorado Department of Transportation and schedule a highway access pre-consultation meeting to determine the size and scope of traffic impacts before submitting an access application [Appendix C, (q) and (r)].	Operations	Lessee	LM		

Abbreviations:

BLM = U.S. Bureau of Land Management
 CPW = Colorado Parks and Wildlife
 USFWS = U.S. Fish and Wildlife Service

Appendix A

Specific Requirements and Stipulations (Appendix C of Lease Agreement)

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SPECIFIC REQUIREMENTS AND STIPULATIONS

The Lessee agrees to comply with all applicable statutes and regulations, including but not limited to the following items:

(a) Prior to resuming mine-development or extraction operations that were previously approved by DOE and permitted by the Colorado DRMS on the Property; the Lessee shall notify the LM ULP Program Manager in writing of its intentions to resume such operations. In addition, the Lessee shall provide DOE with an environmental analysis that includes changes, additions, or modifications to the original plan that are now proposed and that accurately analyzes the environmental impacts associated with the resumption of activities. Upon receipt of such notification, the LM ULP Program Manager shall review the approved plan, along with any new information provided by the Lessee, and determine if additional stipulations are warranted. When all pertinent requirements are satisfied, DOE shall provide the Lessee with a written approval to proceed.

(b) All existing serviceable improvements not associated with the Lessee's operation, such as fences, gates, cattle guards, roads, trails, culverts, pipelines, bridges, and water development and control structures that are authorized for use by the Lessee, shall be maintained in serviceable condition by the Lessee. Such improvements (if not owned by the Lessee) which are damaged or destroyed by the Lessee's operations shall be replaced, restored, or compensated for by the Lessee.

(c) The Lessee's operations shall not disturb public land survey corner markers or monuments or U.S. Atomic Energy Commission survey markers without the prior written approval of the LM ULP Program Manager. Additionally, the Lessee shall pay all costs associated with the surveys required to preserve or reestablish the true point of any such marker or monument and the replacement of such marker or monument.

(d) Housing and other buildings and support facilities related to community development shall be constructed or located on the Property only upon the prior written approval of the LM ULP Program Manager. In constructing and locating such housing, other buildings, and support facilities, the Lessee shall comply with applicable county planning and zoning regulations, subdivision regulations, and mobile home regulations, and shall furnish evidence of such compliance to the LM ULP Program Manager upon request.

(e) Prior to any surface-disturbing activity, the Lessee shall file a "Notice of Intent to Conduct Prospecting Operations" (Notice) or "Reclamation Permit Application" (Application), whichever is appropriate, with the Colorado Mined Land Reclamation Board (MLRB) in accordance with "Mineral Rules and Regulations" of the Colorado MLRB, as these rules may be amended. All subsequent modifications to the Notice or Application shall be

addressed in accordance with the “Mineral Rules and Regulations” of the Colorado MLRB. The Lessee shall provide the LM ULP Program Manager with copies of all pertinent approval documentation, including permits issued.

(f) Prior to any surface-disturbing activity, the Lessee shall consult with the U.S. Department of Interior Bureau of Land Management (BLM), the U.S. Department of Interior Fish and Wildlife Service (USFWS), or the Colorado Department of Natural Resources Division of Parks and Wildlife (CPW), as appropriate, to determine whether threatened, endangered, or sensitive plant or wildlife species occur in the area to be disturbed or whether the agencies have other plant or wildlife concerns in the area to be disturbed that need to be addressed, including but not limited to critical wildlife habitat, bird-nesting sites, and rare or unique biological communities. If required, the Lessee shall conduct surveys or provide other documentation to resolve these concerns. The Lessee shall provide the LM ULP Program Manager with copies of all documents pertaining to this issue.

(g) Prior to any surface-disturbing activity, the Lessee shall perform a cultural and historic resource survey of the area to be disturbed and provide the results of such surveys to the LM ULP Program Manager and BLM. If cultural or historic resources are found to exist, the Lessee shall consult with the LM ULP Program Manager, BLM, and the State Historic Preservation Officer to determine the appropriate measures to be taken. If required, the Lessee shall prepare a mitigation plan to address the protection of the cultural or historical resources. The Lessee shall also consult with BLM to determine the potential for paleontological resources to exist within the area to be disturbed. If such resources are likely to be found in the area, the Lessee shall consult with BLM to implement an appropriate plan to identify, document, and protect the applicable resources. The Lessee shall provide the LM ULP Program Manager with copies of all documents pertaining to this issue.

(h) Prior to any surface-disturbing activity in a potential floodplain or wetland area, the Lessee shall consult with the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency (EPA), and the appropriate state agency to determine whether a jurisdictional floodplain or wetland exists in the area to be disturbed. If required, the Lessee shall prepare a Floodplain/Wetlands Assessment that proposes mitigation measures to be taken to resolve this concern. The Lessee shall provide the LM ULP Program Manager with copies of all documents pertaining to this issue.

(i) The Lessee shall design and construct its operations to minimize the amount of disturbed area. The Lessee shall salvage and stockpile the available surface-soil materials, as practicable, for use in final site reclamation. The Lessee shall avoid disturbing steep slopes and shall conduct its activities to avoid creating such

slopes. The Lessee shall use existing roads, where practicable, and shall conduct activities employing wheeled or tracked vehicles in such a manner as to minimize surface damage. The Lessee shall wash all tracked vehicles or equipment prior to their mobilization to the Property to minimize the potential for transporting and spreading noxious weed species. The Lessee shall promptly repair any road damage resulting from the Lessee's operations, restoring such road to its previous condition or to a condition acceptable to the LM ULP Program Manager. Where existing access roads across the Property are used principally by the Lessee, the Lessee shall construct surface-water control and drainage structures (culverts, water bars, or grade dips) on such roads to minimize erosion. Plans for such structures shall be included in all Exploration Plans and Mining Plans submitted to the LM ULP Program Manager pursuant to Articles XII "EXPLORATION PLAN" and XIII "MINING PLAN" hereof, respectively. The Lessee shall construct new roads and trails on the Property only at locations and to specifications approved in advance in writing by the LM ULP Program Manager or an authorized representative of the LM ULP Program Manager, and shall construct and maintain such roads and trails in a manner that will minimize channeling and other erosion. The Lessee shall design, size, and install culverts as necessary to obtain access across drainages; broad, shallow drainages shall be crossed with minimal disturbance to the drainage banks. The LM ULP Program Manager's approval of plans for new access road construction, culverts, water bars, or grade dips will be guided by standards established by BLM or the U.S. Department of Agriculture Forest Service (USFS), where appropriate.

(j) The Lessee shall conduct operations so as to protect natural resources and the environment, including streams, lakes, ponds, waterholes, seeps, wetlands and marshes, fish and wildlife species and their habitats (including critical habitats), air quality, and scenic and visual resources, as required by applicable laws and regulations. The Lessee shall design and construct mine-waste and ore-storage areas to minimize the potential for contact with storm-water runoff. The Lessee shall place barriers, berms, diversion structures, and sedimentation devices in and around its operations to collect, contain, and control storm-water runoff, thus minimizing the potential for site erosion and sedimentation in area drainages. The Lessee shall control all mine wastes, contaminants, pollutants, and sediments associated with storm-water runoff in accordance with existing regulations and shall comply with environmental regulations regarding discharge into, or degradation of, water resources, including streams, springs, stock waters, and groundwater. The Lessee shall conduct all operations, to the extent practicable and in accordance with applicable environmental requirements and regulations, to minimize the potential for dust or other emissions that may degrade air quality; noise-related impacts, especially during dusk and dawn hours; and offsite shine from facility lighting. The Lessee shall design the placement, form, texture, and color of

structures and facilities to minimize the contrast with the surrounding natural landscape. The Lessee shall not use water from any water source without the written consent of the person having the rights to the use of such water source.

(k) The Lessee shall keep the clearing of timber, stumps, snags, and any ground cover to a minimum consistent with the conduct of exploration, development, and mining activities approved hereunder. The Lessee shall abide by any restrictions concerning the bulk removal of vegetation (primarily piñon pine) that are established by the LM ULP Program Manager. The Lessee shall remove and stockpile such bulk vegetation materials, as practicable, for use as slash during final site reclamation. The Lessee shall use due care to avoid scarring or removal of vegetative ground cover in areas not involved in such operations. Open parks (areas where there is a grass, shrub, or sagebrush cover) shall be disturbed as little as possible. If the shrub or brush cover is too high and must be cleared, it shall be cleared at or above ground level. The Lessee shall return all disturbed areas to their original condition or a condition acceptable to the LM ULP Program Manager promptly after damage to such areas has occurred and operations under this Lease are no longer being conducted in those disturbed areas. Disturbed areas shall be seeded with an approved seed mix.

(l) The Lessee agrees that all underground mine openings shall be supported by pillars, timber, or other ground-support devices approved by the Federal or state agencies having jurisdiction over such underground workings. The Lessee further agrees, during the term of this Lease, to substantially fence or permanently close all mine openings/portals, subsidence holes, surface excavations, or other workings resulting from the Lessee's operation that may be considered hazardous to human health or the environment. Such protective measures shall include appropriate warning signage and shall be maintained in a proper and safe condition during the term of this Lease. Prior to abandoning operations, the Lessee shall submit a mine-site reclamation plan to the LM ULP Program Manager for approval. Such plan shall include the proposed method(s) of permanent closure for all mine openings/portals, including shafts, adits, inclines/declines, ventilation shafts, and water discharge points. No underground workings or any part thereof shall be permanently abandoned and rendered inaccessible without the prior written approval of the LM ULP Program Manager. The Lessee shall conduct mine-site reclamation promptly after the Lessee has determined that mining operations under this Lease have been completed. All disturbed areas shall be returned to their original condition, as practicable, or to a condition acceptable to the LM ULP Program Manager (typically gently sloped undulating surfaces) in accordance with the approved reclamation plan. Reclamation activities shall include the redistribution of available surface-soil and slash materials stockpiled

previously and seeding of the disturbed areas with an approved seed mix. If additional surface-soil materials are required to sufficiently cover the mine-waste and ore-storage areas of the mine site (as determined by radiometric surveys conducted by the Lessee and reviewed by the LM ULP Program Manager), the Lessee shall consult with DOE and BLM to identify an appropriate borrow source and shall initiate material removal only after receiving DOE's approval to do so. Borrow areas shall be reclaimed and revegetated in the same manner as the original mine site.

(m) The Lessee shall construct surface-drill-hole and ventilation-shaft sites and associated disturbances in a manner that, to the extent practicable, eliminates the potential for surface water flow to enter the underground workings. Such features shall be permanently plugged and abandoned, as soon as practicable, in accordance with existing regulations and in a manner that will protect the surface and all natural resources. All disturbed areas identified by the Lessee as unnecessary for future operational activities shall be promptly reclaimed by the Lessee. The LM ULP Program Manager, by written notice to the Lessee, shall designate any other areas where reclamation must be undertaken as a result of disturbances caused by the Lessee's operations.

(n) If antiquities or other objects of historic or scientific interest, including but not limited to historic or prehistoric features or ruins, artifacts, vertebrate fossils, or other paleontological resources, are discovered by the Lessee in the performance of operations under this Lease, the Lessee shall cease operations in the vicinity of such a discovery and immediately take appropriate steps to protect and save such objects of historic or scientific interest. The Lessee shall notify the LM ULP Program Manager of such a discovery at the earliest opportunity. The LM ULP Program Manager, in conjunction with BLM, shall assess the discovery and prescribe such protective measures as are deemed necessary.

(o) The Lessee shall make every effort to prevent, control, or suppress any fire in the operating area and to report any uncontrolled fire to the appropriate BLM or USFS official, as designated by the LM ULP Program Manager.

(p) The Lessee shall provide detailed haul-route information to the LM ULP Program Manager for review prior to commencement of any haul activities. The haul-route information shall include, at a minimum, the expected routes from the mine site to the proposed mill or other facility accepting material from the mine, the expected number of ore trucks per day and the average capacity of those trucks, the location of potential "safe havens" for temporary wayside parking, and the expected production rates and mining-life time frames. It is expected that the

Lessee will utilize only the specified haul routes and coordinate its ore-shipping schedule with the receiving facility.

The Lessee shall notify the LM ULP Program Manager of any significant changes to the haul route plan.

(q) The Lessee shall comply with Colorado State Access Code Section 43-2-147(4), C.R.S., and Section 24-4-103., C.R.S., effective 8/31/98. Pursuant to said code, the Lessee may be required to participate in a highway access pre-consultation meeting with DOE and the Colorado Department of Transportation after the completion and submittal to DOE of the approved permit from the Colorado MLRB. The details provided within the Mining Plan and permit, and the information provided under paragraph (p) above, shall be used to determine the need for the pre-consultation meeting and to determine the potential impacts to county and state roads, highways, and intersections from the Lessee's operations and any resulting mitigation requirements from these impacts. Any revisions or amendments to the permit, or any conversion from one permit type to another approved by the Colorado MLRB, shall also be provided to the LM ULP Program Manager. The permit revision, modification, or conversion may be used to determine additional impacts to the county roads or state highways from the Lessee's operations and resulting mitigation requirements from these impacts. Access permits required under this provision shall be provided to the LM ULP Program Manager.

(r) The Lessee shall attend and participate in meetings between DOE and other Federal, state, and local agencies, as required.

(s) Prior to entry into existing lease-tract mines or mine workings (or prior to the resumption of mining operations therein) where mitigative measures have been previously undertaken to conserve potentially critical habitat for BLM-listed sensitive bat species, the Lessee shall consult with BLM and CPW to mitigate the impacts of the Lessee's activities to the referenced bat species. During mining operations and prior to final mine-closure and reclamation activities, the Lessee shall take all actions necessary to preclude bats from entering the underground mine workings.

(t) The Lessee agrees that no new surface-disturbing mining activities shall be conducted within 0.25 mile of the Dolores River or other perennial streams. Additionally, the Lessee agrees that all future activities conducted at existing mine sites that are located within 0.25 mile of the Dolores River and that have an active permit with the Colorado DRMS on the effective date of this Lease, shall be conducted in a manner that does not further encroach on the Dolores River.

(u) During mining operations, if sufficient water is encountered in the mine workings that the Lessee is required to pump excess water to the surface and treat such water prior to discharge to the environment in accordance

with a State-administered National Pollution Discharge Elimination System permit, then the Lessee shall consult with USFWS to address wildlife concerns associated with the mine-water treatment system, regardless of its configuration.

(v) Transmission lines, if required, shall be designed and constructed in conformance with *Avian Protection Guidelines* (APLIC and USFWS 2005) and in conjunction with *Suggested Practices for Avian Protection on Power Lines* (APLIC 2006) to reduce the potential for avian interactions with electrical utility facilities.

EXPLORATION PLAN FORMAT

It is not DOE's intent to require the Lessee to prepare multiple documents for submittal to the appropriate agencies for review and approval. Consequently, at the Lessee's discretion, a copy of the "Notice of Intent to Conduct Prospecting Operations" filed with the Colorado MLRB may be submitted to DOE for review and approval. That document will meet DOE's requirement for submittal of an Exploration Plan providing it contains, at a minimum, the following information:

- a. Map showing general area to be explored
 1. Tentative location of drill holes or other exploration activity
 2. Location of roads (existing and proposed)
- b. Approximate starting date and duration of drilling
- c. Drilling information
 1. Type of drilling and other exploration equipment
 2. Size of hole and core, if any, to be recovered
 3. Type of logging
 4. Target horizon and depth
- d. Road construction necessary for exploration
 1. Location of roads and drill sites
 2. Measures to be taken for erosion control
- e. Abandonment
 1. Procedures for plugging drill holes, including the disposition of drill-hole cuttings
 2. Surface restoration (grading, revegetation, erosion control, and other restoration measures)
- f. Provisions made to conform with existing state and federal regulations regarding control of fire, pollution of water and air, protection of other natural resources, and public health and safety, both during and upon abandonment of exploration activities
- g. Specific measures to be taken to ensure compliance with environmental and surface use stipulations of this Lease, including the preparation of a site-specific environmental document that ensures compliance with NEPA and other environmental regulations

MINING PLAN FORMAT

It is not DOE's intent to require the Lessee to prepare multiple documents for submittal to the appropriate agencies for review and approval. Consequently, at the Lessee's discretion, a copy of the "Reclamation Permit Application" filed with the Colorado MLRB may be submitted to DOE for review and approval. That document will meet DOE's requirement for submittal of a Mining Plan providing it contains, at a minimum, the following information:

- a. Map showing the location of:
 1. Ore body and proposed entry
 2. Existing roads in the area and any new roads required
 3. Mine plant and associated structures and facilities, including storm-water diversion and control structures
 4. Surface-soil materials stockpile areas
 5. Waste dumps and ore-storage areas
- b. Mining
 1. Initial development plans
 - A. Type of entry and haulage method proposed
 - B. Stopping method
 - C. Estimated rate of daily ore production and mine-life expectations
 - D. Provisions to handle mine water
 2. Proposed ventilation and radiation-control methods
- c. Surface Plant
 1. Buildings, utility lines, and storage/stockpile areas, including storm-water diversion and control structures
 2. Mine-water treatment facilities, if required
 3. Sewage and refuse containment and disposal
 4. Compliance with any applicable county planning and zoning regulations
 5. Compliance with EPA storm-water discharge regulations
 6. Storage of fuels, powder/explosives, and other mining-related supplies

- d. Surface restoration plans
 - 1. Surface-soil materials removal and storage
 - 2. Grading and backfilling
 - 3. Control of storm-water runoff
 - 4. Revegetation
- e. Abandonment
 - 1. Permanent closure of all mine openings/portals resulting from, or utilized during, the Lessee's operations
 - 2. Removal of structures and associated features
 - 3. Disposition of mine wastes (contouring, leveling, backfilling, and other reclamation processes)
- f. Provisions made to conform with existing state and federal regulations regarding control of fire, pollution of water and air, protection of other natural resources, and public health and safety, both during mining activities and upon abandonment of mining activities
- g. Specific measures to be taken to ensure compliance with environmental and surface use stipulations of the Lease, including the preparation of a site-specific environmental document (environmental assessment at a minimum) that ensures compliance with NEPA and other environmental regulations