U.S. Department of the Interior
Bureau of Land Management

Environmental Assessment
DOI-BLM-CA-D050-2014-014-EA
For
Exploratory Drilling of the Dragonfly Placer Claims
by
Glacial Minerals, Inc.
Plan of Operations (POO) - CACA-53193

Located within:
Sections 10 & 11 of
Township 29 South, Range 38 East,
Mount Diablo Meridian
Kern County, California

Office of Record:
Bureau of Land Management
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CHAPTER 1
INTRODUCTION

1.0 Introduction

Glacial Minerals, Inc has submitted to the Bureau of Land Management a plan to explore and conduct drilling operations on unpatented placer claims located within Kern County, California. These claims are the Dragonfly Group, 6 placer claims covering roughly 960 acres of public lands in and adjacent to Last Chance Canyon, within the El Paso Mountains. The operator has described and informed BLM of their intention to drill 12 exploration holes with a portable drill rig, averaging roughly 165 deep each, and accessing the sites by existing trails and routes. The lands involved are classified for Limited Use by prevailing BLM land use plans. Given that land status, BLM has a ministerial need to treat this proposal as a plan of operations requiring authorization by BLM, rather than a Notice not requiring formal authorization.

This environmental assessment analyzes the impact(s) of BLM issuing a decision to authorize this project in conformance with the Federal Land Policy & Management Act, 43 USC 1732, and constitutes BLM’s compliance with the National Environmental Policy Act. The document is written to aid BLM managers in determining whether authorization of this action will, or will not result in significant impacts requiring an environmental impact statement, and has no other purpose.

1.1 Purpose and Need for the Proposed Action

BLM has a ministerial need to respond to an application to gather samples from the Dragonfly placer claims, allowing the claimant to gather direct evidence of the subsurface geology and mineralization of these claims. This need is established by Section 302b of the Federal Land Policy and Management Act of 1976 (43 USC 1732(b), by and by the Surface Management regulations promulgated under the authority of FLPMA, 43 CFR 3809).

The Mining Law states at 30 USC §22 that “Except as otherwise provided, all valuable mineral deposits in lands belonging to the United States, both surveyed and unsurveyed, shall be free and open to exploration and purchase, and the lands in which they are found to occupation and purchase, by citizens of the United States and those who have declared their intention to become such, under regulations prescribed by law, and according to the local customs or rules of miners in the several mining districts, so far as the same are applicable and not inconsistent with the laws of the United States.” The Federal Land Policy and Management Act of 1976 (FLPMA) mandates the Department of Interior to respect the rights of ingress and egress associated with the Mining Law of 1872 while taking any action necessary to prevent unnecessary or undue degradation of public lands (43 USC 1732(b)). It is the BLM's purpose to fulfill the mandates of FLPMA while ensuring compliance with applicable land management plans, protection of resources, and ensuring that all operations comply with Federal and State laws (43 CFR 3809.420).
establishing procedures and standards for operations on public land authorized by the mining laws. These regulations establish when activities under the Mining Law must have an authorized plan of operations, and establish that BLM's authorization of such plans and plan modifications is subject to the National Environmental Policy Act (NEPA).

1.2 Decision to be made:

The Bureau of Land Management will decide whether to approve, approve with modification, or disapprove the drilling plan submitted by Glacial Mineral, Inc.

1.3 Conformance with BLM Land Use Plans

This proposal is in conformance with the California Desert Conservation Area Management Plan of 1980, as amended and the Western Mojave Management Plan, Record of Decision March 2006. These and other plans are publicly available at http://www.blm.gov/ca/st/en/fo/cdd/landuseplanning.html. The lands covered by this assessment are classified for Limited Use under the Western Mojave management plan (WEMO). Table 1 of the California Desert Plan specifies that mineral-related operations are allowed on public lands classified for Limited Use subject to the authorization process for Plans of Operation detailed in Surface Management regulations 43 CFR 3809.

1.4 Relationship to Statutes, Regulations or other Plans

Surface Management regulations provide that all operations must be conducted in compliance with state and federal law (43 CFR 3809.420). The applicable laws include:

- The Mining Law of 1872, 30 USC 22, provides for the right to explore and purchase valuable mineral deposits on lands belonging to the United States, so far as is not inconsistent with the laws of the United States.

- The Federal Land Policy and Management Act of 1976 states it is the policy of the United States to manage the public lands in a manner that recognizes the nation’s need for domestic sources of minerals, provides rights of ingress and egress to locators under the Mining Law of 1872, and mandates the Secretary of Interior to prevent unnecessary or undue degradation of public lands (43 USC 1701(a)(12)) and 43 USC 1732(b)).

- The Mining and Minerals Policy Act of 1970, 30 USC 21a, declares it is the policy of the United States to foster and encourage the orderly and economic development of domestic mineral resources.

- Surface Management regulations 43 CFR 3809 (available online at http://www.blm.gov/wo/st/en/prog/planning/nepa/webguide/cfr/43_cfr_3809.html) establish that:
All operations must prevent unnecessary or undue degradation of public lands (43 CFR 3809.1).
Operations greater than casual use must have an authorized plan of operations within areas classified for Limited Use (43 CFR 3809.11)
The use of truck-mounted drilling equipment is not casual use (43 CFR 3809.5).
Reclamation must be initiated/completed at the earliest economically and technically feasible time on those portions of the disturbed area that will not be disturbed further (43 CFR 3809.420(a)(5).
All operations must be conducted in compliance with pertinent Federal and state laws (43 CFR 3809.(a)(6)).
Operations must be conducted in compliance with BLM land-use plans, and comply with mitigation measures specified by BLM to protect public lands (43 CFR 3809.420(1)(3) and 3809.420(a)(4).
Plans of operation remain in effect as long as the operator is conducting operations, unless BLM suspends or revokes the plan for failure to comply with Surface Management regulations (43 CFR.423).
If an authorized operation is inactive for 5 consecutive years, BLM may review the operation and determine whether to terminate the plan and direct final reclamation and closure. Reclamation and closure obligations continue until satisfied (43 CFR 3809.424).
The operator must supply financial guarantee sufficient to meet the reclamation requirements prior to starting operations (43 CFR 3809.500).

The National Historic Preservation Act, 16 USC 470, requires Federal agencies to consider the effect of Federal undertakings (including Federal authorizations) on sites that may be eligible for inclusion in the National Register of Historic Places.

The Endangered Species Act, 16 USC 1536, requires Federal agencies to ensure that Federally-authorized actions are not likely to jeopardize the continued existence of any threatened or endangered species.

The California Surface Mining and Reclamation Act of 1975 (Public Resources Code, Sec. 2710) regulates activities associated with mining by the State of California. County governments are commonly the lead agency for regulation and enforcement of this Act. The common threshold for application of this Act is approximately 1000 cubic yards of disturbance in any one acre of land.

1.5 Scoping and public comment
CHAPTER 2
DESCRIPTION OF ALTERNATIVES

2.0 Introduction

This Environmental Assessment includes two alternatives: the Proposed Action as submitted by Glacial Minerals, Inc., and the No Action Alternative, under which the BLM would not authorize this program.

2.1 Proposed Action

Project Description

On the basis of a surface sampling study, a program of 12 subsurface explorations (drill holes) each to a maximum depth of approximately 165 feet (50 m) below ground surface (bgs) is been proposed within the Dragonfly Claim Group. The Universal Traverse Mercator (UTM) coordinates of the 12 proposed drill sites are listed in Table 1, UTM Coordinates of Proposed Drill Locations. See Figure 1 for the general location and condition of the project area, sites and routes. See Figure 2 and Figure 3 for location of the pertinent mining claim, drilling locations, proposed access, and relationship to adjoining features.
Figure 1. Generalized location of the Dragonfly exploration drilling project. The area is near, but outside the Last Chance Canyon Area of Critical Environmental Concern.
Figure 2. General location of pertinent placer mining claims, drilling locations and relationship to Last Chance Canyon.
**The Drill Hole Location Study Area is defined by a 5-acre buffer surrounding each Drilling Hole. Access roads include a 50-foot buffer (from the centerline of the road) on both sides of the access roads. EP15 does not include a 50-foot buffer because this travel route is frequently traveled as one of the main roads in the area, which is an allowable use in the West Mojave Plan.**

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**Figure 3. Proposed drilling locations, access, and designation of access routes where known.**

The 12 proposed drill site locations, access roads, and staging areas occur within existing dirt trails and/or off-highway vehicle (OHV) travel routes. All work will remain within the existing roadways. Trucks will turn around or back out at specified locations to ensure that all equipment remains within the existing roadways. In addition, two staging areas (i.e., where trucks will be parked) were identified within the study area and are contained entirely within existing dirt trails and OHV travel routes. The tables below provide the UTM coordinates of the proposed drill locations and the associated unpatented placer claims:

**Table 1: UTM Coordinates of Proposed Drill Locations**

<table>
<thead>
<tr>
<th>Site #</th>
<th>Easting</th>
<th>Northing</th>
</tr>
</thead>
<tbody>
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**Table 2: Associated Unpatented Placer Claims**

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<th>Serial Number</th>
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<tr>
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<td>CAMC297267</td>
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<tr>
<td>Dragonfly 3</td>
<td>CAMC297787</td>
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<tr>
<td>Dragonfly 4</td>
<td>CAMC297788</td>
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<tr>
<td>Dragonfly 5</td>
<td>CAMC299505</td>
</tr>
<tr>
<td>Solder Top</td>
<td>CAMC297268</td>
</tr>
</tbody>
</table>
roadways. Both staging areas have alternate routes adjacent to them to allow for continued traffic flow around the staging area while equipment is parked.

The involved equipment will include

- One Trusonic drill, truck-mounted drilling rig with accompanying pipe truck. Trusonic drilling employs the use of high frequency, resonate energy to advance a core barrel or casing into subsurface formations. During drilling, the resonant energy is transferred down the drill string to the bit face at various sonic frequencies. Simultaneously rotating the drill string evenly distributes the energy and impact at the bit face. The resonant energy is generated inside the Trusonic head by two counter-rotating weights. The driller controls the resonant energy generated by the Trusonic oscillator to match the formation being encountered to achieve maximum drilling productivity. When the resonant sonic energy coincides with the natural frequency of the drill string, resonance occurs. This results in the maximum amount of energy being delivered to the face. At the same time, friction of the soil immediately adjacent to the entire drill string is substantially minimized, resulting in very fast penetration rates.

- Geophysical survey equipment. Geophysical surveys may be conducted after the completion of drilling. A down hole geophysical survey will be performed using electrical methods (induce polarization [IP] and resistivity); the instrumentation is lowered down the hole to measure the electrical properties of the surrounding material.

- Five or more four-wheel drive (4WD) passenger vehicles.

- Hand tools and supplies. Including shovels, 20-liter (5-gallon [gal]) pails, and miscellaneous items for sample transfer and handling.

**Drilling Plan Details**

Drilling locations are proposed exclusively along existing roadways away from steep slopes in order to avoid erosion and to minimize the land area devoted to subsurface exploration activities. No water trucks or pits are planned with this operation. If water for drilling proves necessary, holes may be mudded from the drill rig. Encountering moisture within the proposed drill holes will not prevent continued drilling operations. If groundwater is encountered, drill holes will receive bentonite chips from the bottom of hole to 5 feet (1.7 m) above the groundwater interface, and holes will then be backfilled. Drill holes will be backfilled in accordance with BLM requirements and Kern County drill hole abandonment procedures.

Some of the drill holes may remain open overnight in order to complete drilling and down hole geophysics. In the event that a drill hole must remain open overnight, the road will be properly barricaded. Because different drill holes are located on different roads, the need for detours/alternate routes will be addressed on an as needed basis.

It is anticipated that subsurface exploration activities will occur as soon as practicable and reasonable after approval of operations.
All access to and within the site will occur using rubber-tire vehicles on existing routes. From route CA-14, the site will be accessed via existing BLM route EP-155, then by the routes shown in Figure 3, above. Status of the routes is shown by the Proposed Action – West Mojave Route Designation Program, Final Environmental Impact Statement (EIS), Map 21. (note maps online at http://www.blm.gov/ca/st/en/fo/cdd/wemo_plan_feis_maps.html).

Existing disturbances include a network of informal, unpaved roads, as well as historical and current disturbances arising from grazing and mining throughout the area. Tailings and old mine workings are present across the claim group. The dates of origin of these disturbances are unknown.

Twelve drill holes are proposed. Drilling will be conducted using a 6-5/8–inch diameter drill bit and will penetrate to a depth of approximately 165 feet (50 m) bgs or refusal on pre-Cenozoic basement rocks.

A truck-mounted Trusonic™ drilling system will be used for drilling and sampling each exploration. A pipe truck will also be utilized in order to provide casing for the explorations. The two trucks will typically be arranged in tandem (e.g., back to back) in order not to necessitate parking off of the currently disturbed road surface. If turnaround areas are required, or if a back-to-back arrangement is infeasible because of local road conditions, all maneuvering will be conducted in a manner that avoids disturbance to off-road areas and vegetation. Disturbance from the drill rig and pipe truck is not anticipated. The disturbance created by drilling is estimated to be a few square feet. The total area for the drill rig and support truck would not exceed 3 meters (roughly 9 feet) and 20 meters (roughly 60-65 feet) or approximately 540 square feet per drill site; the total disturbance area for each drill hole would be significantly less.

**Field Protocols and Standard Operating Conditions**

There are a number of field protocols and standard operating conditions that will be implemented. These include compliance with all of the terms, provisions, and requirements with applicable laws that relate to federal, state, and local regulating agencies related to potential impacts to biological resources. The following provides a discussion of federal, state, California Native Plant Society (CNPS), and local regulations, including the West Mojave Plan.

To ensure indirect impacts (e.g., due to human presence, noise, and vibrations from drilling activities) are minimized, the following protocols and operating conditions will be implemented:

- As a standard operating procedure, the drilling rig and attending vehicles will be washed prior to entering the Project area and before they leave the state highway.

- Vehicles will drive at speeds not to exceed 15 miles per hour (mph) within all travel routes.

- Cross-country vehicle use by Project personnel is prohibited at all times.

- Dogs will not be allowed at work sites.
• The applicant/owner shall designate a biological monitor who will be responsible for overseeing compliance with stated protocols and standard operating procedures for coordination with the BLM. The monitor will be on site during all drilling activities and will have the authority to halt all drilling activities.

• Prior to mobilization of the drill rig to a drill site, a temporary exclusion fence will be erected around the drilling location at least 50 feet in each direction from the extent of the drilling equipment along each side of the road. Once the drilling rigs and trucks are in place, temporary exclusion fencing will be erected at each end of the work area across the roadway. All temporary exclusion fencing will be secured at the bottom (e.g., partially buried, straw wattle keyed in along the bottom) to ensure there are no gaps in the fencing such that no wildlife can dig or crawl under the exclusion fencing.

• No access roads shall be bladed. Access to the drill holes study areas shall be restricted to the routes of travel indicated on Figure 3. Prior to mobilization, the access routes will be flagged with survey tape to minimize disturbance of vegetation. No access of previously unsurveyed roads or routes will be permitted.

• Project personnel will receive on-site (“tailgate”) sensitivity training for both biological and cultural resources prior to the start of work.

• Project personnel will inspect under their vehicles prior to starting engines and moving vehicles to ensure no desert tortoises or other wildlife are found. If a desert tortoise is present under a parked vehicle, the Project personnel shall carefully move the vehicle only when necessary and when the desert tortoise would not be injured by moving the vehicle, or the Project personnel shall wait for the desert tortoise to move out from under the vehicle.

• Upon locating an injured or dead tortoise (either Project related or otherwise) within the vicinity, the environmental monitor will notify the BLM Field Office immediately. The information provided as part of the notification will include the date and time of the finding or incident (if known), the location of the carcass or injured animal, a photograph, the cause of death (if known), and other pertinent information.

• The excavated top 6 inches of soils removed during drilling from access roads shall be stockpiled on the drill site area. Immediately following completion of the exploratory drilling, the stockpiled soils shall be placed back in the top portion of the drill holes. After site rehabilitation, all exclusionary fences shall be removed.

It is estimated that the field crew will include a total of 5 to 10 workers on site at any given time during exploratory drilling operations. Work will be accomplished in single shifts during daylight hours (typically 7:00 AM to 5:00 PM). No nighttime, early morning, or dusk operations will be permitted.
PROPOSED RECLAMATION

General
Debris and waste materials will be removed. All subsurface exploration waste will be handled according to the COGCC 900 Series rules (https://cogcc.state.co.us/RR_Docs_new/rules/900Series.pdf), which rules include isolation and disposal offsite in an approved facility. All drill holes will be backfilled upon the completion of down hole geophysical surveys. Backfill will be compacted and smoothed at the ground surface so as to be indistinguishable from the surrounding dirt road.

All disturbed areas affected by drilling or subsequent operations will be reclaimed as early as possible and as nearly as practicable to their original condition and will be maintained to control dust and minimize erosion.

All trash will be disposed of properly off site. All other wastes will be collected and disposed of in a manner consistent with existing laws and regulations.

The operation is subject to the reclamation bonding requirements of 43 CFR 3809.500, which includes the cost to reclaim operations as if BLM were hiring a third-party contractor to perform reclamation after the operator has vacated the project area, plus BLM’s cost to administer a reclamation contract (43 CFR 3809.554).

Reclamation and Other Measures to Prevent Unnecessary or Undue Degradation
All of the drilled material—with the exception of the top 6 inches of topsoil—from the drill holes will be transported off site. Aside from concrete/cement slurry and bentonite chips, backfill will consist of imported clean sand and gravel or whatever import material the BLM prefers. The drill holes will be backfilled in accordance to BLM regulations.

Further, the operator will complete reclamation efforts in accordance with 43 CFR 3809.420(b)(3). This regulation states:

Reclamation.

(i) At the earliest feasible time, the operator shall reclaim the area disturbed, except to the extent necessary to preserve evidence of mineralization, by taking reasonable measures to prevent or control on-site and off-site damage of the Federal lands.

(ii) Reclamation shall include, but shall not be limited to:

(A) Saving of topsoil for final application after reshaping of disturbed areas have been completed;

(B) Measures to control erosion, landslides, and water runoff;
(C) Measures to isolate, remove, or control toxic materials;

(D) Reshaping the area disturbed, application of the topsoil, and revegetation of disturbed areas, where reasonably practicable; and

(E) Rehabilitation of fisheries and wildlife habitat.

(iii) When reclamation of the disturbed area has been completed, except to the extent necessary to preserve evidence of mineralization, the authorized officer shall be notified so that an inspection of the area can be made.

**Periods of Nonoperation**

All exploratory work is to be conducted within a single span of consecutive weekdays, and no extended nonoperational period is anticipated.

However, as necessary, measures will be taken during extended periods of nonoperation to maintain the area in a safe and clean manner and to reclaim the land to avoid erosion and other adverse impacts. The drill rig may occupy a site overnight if a drill hole and sampling are not complete by the end of a work day. Under such circumstances, the open drill holes will be covered, probably with plywood held down by the drill itself, and barricaded by the drill rig and support vehicle. Signage to alert passing traffic will be in place per BLM specifications. The temporary fencing will remain in place.

**Fire Control**

Prior to commencement of the proposed activities, the applicant will prepare and implement a fire prevention and suppression plan that will identify measures to be taken by the applicant and its contractors to ensure that fire prevention and suppression techniques are carried out in accordance with federal, state, and local regulations...

This plan will address, among other items, responsibilities and coordination among GMI, its contractors, and fire control authorities; fire prevention measures (including training, restrictions on smoking, use of spark arresters, parking, vehicle operation, storage areas, fire control and suppression equipment, road closures, refueling, burning, fire guards, communications, welding, restricted operations, monitoring, facility operations, and facility maintenance); fire suppression; and notification procedures.

**Documentation of Biota or Other Natural Resources**

The operator has had sensitive biota surveyed, and this information is available to BLM to prepare a biological assessment, if required.

The proposed Project is sited exclusively on existing routes and previously-disturbed trails/linear features. Minimal undisturbed land will be affected, and the operator feels environmental consequences of ground disturbing activities, as well as all other environmental consequences, will have little or no effect on the environment.
Hazards to Public Health and Safety
Given the nature and extent of industrial activities at the site, as well as the fact that the site is located in a relatively remote part of Kern County, the operator feels it is not likely that this Project will pose any significant threat to public health and safety. Furthermore, the applicant will implement a comprehensive health and safety program that will protect not only the workers at the site, but also any non-project personnel who may be nearby.

2.2 No Action Alternative

The no action alternative means disapproving or withholding approval of the proposed action, thereby barring Glacial Minerals, Inc. from drilling or conducting any operations greater than casual use on its own mining claims. Title 43, Subpart 3809.411 of the Code of Federal Regulations allows the BLM to disapprove or withhold approval of a plan of operations if it proposes operations that would result in unnecessary or undue degradation of public lands. Surface management regulations define unnecessary or undue degradation to mean conditions, activities, or practices that:

(1) Fail to comply with one or more of the following: the performance standards in 43 CFR §3809.420, the terms and conditions of an approved plan of operations, operations described in a complete notice, and other Federal and state laws related to environmental protection and protection of cultural resources;

(2) Are not “reasonably incident” to prospecting, mining, or processing operations as defined in 43 CFR §3715. 0-5; or

(3) Fail to attain a stated level of protection or reclamation required by specific laws in areas such as the California Desert Conservation Area, Wild and Scenic Rivers, BLM-administered portions of the National Wilderness System, and BLM-administered National Monuments and National Conservation Areas.

2.3 Alternatives Eliminated From Analysis

Alternatives considered but eliminated from further analysis include

*Mandating forms of acquiring geologic information by means other than drilling.*

The alternative of acquiring information without a drill rig is not analyzed because it does not respond to BLM’s purpose and need of the proposed action, which is to avoid impairing the rights of locators under the Mining Law of 1872 while preventing unnecessary or undue degradation of the lands. Additionally, this would not achieve the applicant’s purpose, which is to obtain direct and quantifiable samples of any mineral deposits that may be present below the surface of these unpatented mining claims. Drilling is the only feasible way to obtain direct and observable samples of mineralization at depth below the surface.
Accessing the proposed drill sites by some means other than the proposed routes.

It is reasonable that any equipment large enough to drill 165 feet will need to be carried by truck. That being so, the appropriate portions of the placer claims can be reached either by driving cross-country or on existing open and/or closed routes. The purpose and need for this action includes providing ingress/egress for activities incident to the Mining Law while at the same time avoiding unnecessary/undue degradation of public lands. It is unnecessary/undue degradation to drive or construct a route cross-country when an existing route is already available.

Denying usage of routes undesignated or closed under the Western Mojave Management Plan. Some of the routes described by Figure 3 are labeled Unknown (UNK) and are not designated open routes under the Western Mojave land use plan (2006). It would be unreasonable to deny usage of such undesignated routes because BLM would then be impairing the claimant’s ability to access and sample these claims in contravention of the Purpose and Need for this assessment.

CHAPTER 3
AFFECTED ENVIRONMENT

3.1 Introduction

This chapter presents a description of the existing environment of the area potentially to be affected by the Proposed Action. Discussion includes those physical, biological, social, and other values which are necessary to understand the effects or potential effects of the alternatives so as to summarize what is needed for assessment or analysis.

An Interdisciplinary Team Checklist (Appendix 1) indicates which resources of concern are either not present in the project area or would not be impacted to a degree requiring detailed analysis. Resources which could be impacted to a level required further analysis are described in this chapter, and impacts on these resources are analyzed in Chapter 4.
The following elements were considered but not analyzed in this assessment either because they are not present, or have negligible potential to be affected by the proposed action.

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<th>RESOURCE OR ISSUE</th>
<th>REASON NOT CARRIED FORWARD FOR ANALYSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of Critical Environmental Concern</td>
<td>The proposed action is outside the boundaries of any ACEC (Figure 1).</td>
</tr>
<tr>
<td>Environmental Justice</td>
<td>Not likely to effect, not near any population center.</td>
</tr>
<tr>
<td>Prime or Unique Farmlands</td>
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</tr>
<tr>
<td>Fish Habitat</td>
<td>Not Present</td>
</tr>
<tr>
<td>Floodplains</td>
<td>Not Present</td>
</tr>
<tr>
<td>National Historic Trails</td>
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</tr>
<tr>
<td>Paleontology</td>
<td>No/negligible potential for occurrence of scientifically significant fossils.</td>
</tr>
<tr>
<td>Sage Grouse Habitat</td>
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</tr>
<tr>
<td>Park; Wilderness; Lands having Wilderness Characteristics; National Natural Landmarks; Sole or Principal Drinking Water Aquifers; Designated Critical Habitat of Threatened or Endangered Species</td>
<td>Not Present</td>
</tr>
</tbody>
</table>

### 3.2 General Setting, Physiography, Soil and Climate

The proposed exploration area is set in the El Paso Mountains of eastern Kern County, situated roughly and approximately 15 miles south of Inyokern and 15 miles northwestly of Randsburg, California (See Figure 1). The El Paso Mountains are roughly 16 miles long, trending approximately west-southwest to east-northeast, lying between California Highway 14 on the west and U.S. Highway 395 on the east. The highest point in the El Paso Mountains is Black Mountain at 5213 feet elevation. The project area is adjacent to Last Chance Canyon. Elevations in the claim group range roughly from 3386 to 3970 feet. The El Paso Mountains form part of the northern boundary of the Mojave Desert with corresponding climate and vegetation. Daytime temperatures commonly range above 100° F. in the summer, winter temperatures occasionally ranging down to 20° F. at night. Vegetation includes creosote, bursage and other common desert shrubs along with cactus and occasional bunch grasses and annuals.
3.3 Air Quality, Greenhouse Gas Emissions, Soil and Water (Hydrology)

Air Quality

The Eastern Kern Air Pollution Control District has state air quality jurisdiction over the area. The District regulates seven pollutants called “criteria pollutants”: Ozone (O3), Carbon Monoxide (CO), Lead, two types of Particulate Matter (PM-10 and PM-2.5), Sulfur Oxides (SOx) and Nitrogen Oxides (NOx). The District also regulates Hydrogen Sulfide (H2S) under a state standard. California has a toxics program that adopts regulations for particular sources of toxics, such as benzene from retail service stations, which the district is then required by state law to enforce. Title III of the Clean Air Act Amendments of 1990 also regulates toxics.

Greenhouse Gas Emissions

Climate change refers to any significant change in measures of climate (temperature, precipitation, or wind) that lasts for an extended period (e.g., decades or longer). A number of factors may affect climate change, including: natural cycles (e.g., changes in the sun’s intensity or earth’s orbit around the sun): natural processes within the climate system (e.g., changes in ocean circulation); and human activities that lead to changes the atmosphere’s composition (e.g., burning fossil fuels), land surface (e.g., deforestation, reforestation, urbanization, and desertification), and water bodies (oceanic acidification, sea level rise, and formation of dry lakes).

California is a substantial contributor to global GHG emissions as it is the second largest contributor in the U.S. and the 16th largest in the world. GHGs include:

1. Carbon dioxide (CO2)
2. Methane (CH4)
3. Mono-nitrogen oxides (NOx)
4. Hydrofluorocarbons (HFCs)
5. Perfluorocarbons (PFCs)
6. Sulfur hexafluoride (SF6)

The proposed action would involve the use of motor vehicles and resulting emissions. The expected number of vehicles is a maximum of 4 rubber tired vehicles including a drill rig, pipe truck and pickup trucks. These vehicles will be onsite for a limited duration and will likely be equipped with emissions control devices for on road vehicles.

According to the Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report, increased atmospheric levels of CO2 correlate with rising temperatures; concentrations of CO2 have increased by 31 percent above pre-industrial levels since 1750. Climate models show that temperatures will probably increase by 1.4 degrees Celsius (°C) to 5.8 °C between 1990 and 2100. Much uncertainty in this increase results from not knowing future CO2 emissions and inherent uncertainty in the assumptions that frame climate models.

GWP is a measure of how much a given mass of GHG is estimated to contribute to global warming and is devised to enable comparison of the warming effects of different gases. It is a relative scale that compares the gas in question to that of the same mass of CO2. CO2 equivalence
(CO$_2$e) is a measure used to compare the emissions from various GHGs based on their GWP, when measured over a specified timescale (generally 100 years). CO$_2$e is commonly expressed as million metric tons (MMT) of carbon dioxide equivalents (MMTCO$_2$e). The CO$_2$e for a gas is obtained by multiplying the mass (in tons) by the GWP of the gas. For example, the GWP for CH$_4$ over 100 years is 25. This means that the emission of one MMT of CH$_4$ is equivalent to the emission of 25 MMT of CO$_2$, or 25 MMTCO$_2$e.

**Soil**

The project is located primarily on existing roads and trails. Due to the limited scope of the proposed action, soil recovery from drilling activities would be limited.

**Water (Hydrology)**

Surface water runoff from the surrounding hillsides is concentrated into Last Chance Canyon. Runoff from the project site would also be expected to collect and drain down into the canyon.

The El Paso Mountains contain high-quality groundwater resources, and the local water table is known to be very close to surface elevation (<50ft) in locations nearby the project site.

3.4 Biological Resources

During the biological surveys, an inventory of all plant and wildlife species observed was compiled for the purposes of vegetation mapping. All species observed are listed in the Biological Assessment as an Appendix to this EA.

**Vegetation**

**Creosote Bush Scrub Alliance**

Creosote Bush Scrub Alliance is found throughout the majority of the Dragonfly Claim Group area and is dominated by sparsely-spaced creosote bush. This alliance consists of a mosaic of desert shrubs with varying densities of subdominant species, such as Nevada ephedra (*Ephedra nevadensis*) and Anderson’s boxthorn (*Lycium andersonii*). Associated species observed within this community include desert trumpet (*Eriogonum inflatum*), indigo bush (*Psorothamnus arborescens* var. *minutifolius*), white bursage (*Ambrosia dumosa*), allscale (*Atriplex polycarpa*), bristly fiddleneck (*Amsinckia tessellata*), silver cholla (*Cylindropuntia echinocarpa*), beavertail cactus (*Opuntia basilaris*), and Fremont’s peppergrass (*Lepidium fremontii*). Creosote Bush Scrub Alliance is the only vegetation community at each drill hole study area and access road, with the exception of Drilling Locations 1A, 4, 7, and 10, and access road EP134, where Burrobush Scrub Alliance also occurs.
Burrobush Scrub Alliance

Burrobush Scrub Alliance is dominated by burrobush (*Ambrosia salsola*) with a subdominance of California buckwheat (*Eriogonum fasciculatum*). Associated species observed within this community include Acton’s encelia (*Encelia actoni*), wishbone bush (*Mirabilis bigelovii*), and desert trumpet (*Eriogonum inflatum*). Burrobush Scrub Alliance is found along access road EP134 and within portions of Drilling Locations 1A, 4, 7, and 10.

**Special Status Plant Species**

Sensitive plant species with the potential to occur within the Dragonfly Claim Group were assessed based upon documented occurrences as identified in the US Forest Service (USFWS), California Department of Fish and Wildlife (CDFW), and California Native Plant Society (CNPS) databases, as well as on the plant survey conducted April 2 through 4, 2013.

Red Rock tarplant is a BLM Special Status Species (BLMS) and CA State Rare species that is found on clay and volcanic tuff substrates within Mojave Desert scrub communities. This species was not observed during the biological survey. Due to the fact that soil composition is not suitable, this species is not expected to occur within the drill hole study areas.

Red Rock poppy is a BLMS and California Rare Plant Rank (CRPR) List 1B.2 species that inhabits volcanic tuff substrates in Mojave Desert scrub communities. During the biological survey, one seedling poppy, which may have represent Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*), was observed outside of the study area in the vicinity of access road EP15.

Other sensitive plant species with potential to occur due to suitable habitat include: Clokey’s cryptantha (*Cryptantha clokeyi*, BLMS, CRPR List 1B.2), creamy blazing star (*Mentzelia tridentata*, BLMS, CRPR List 1B.3), and Charlotte’s phacelia (*Phacelia nashiana*, BLMS, CRPR List 1B.2).

**Wildlife**

The area surveyed includes a five acre buffer (approximately 264-foot radius) around each of the proposed drilling locations, the access roads to and from each drilling location, including a 50-foot buffer from the centerline of each access road, and two project staging areas located on existing roadways, also with a 50-foot buffer from the centerline of the roadway. Some of the vehicle routes within the Project Study Areas are not BLM Designated routes.

Various data bases were reviewed for information regarding observations of sensitive species and habitats in the vicinity of the Project site. A biological survey to document existing conditions, map natural communities, and identify potential presence of sensitive species was conducted within the each of the drill hole areas on April 2 through April 4, 2013. In addition, an
analysis of wildlife movement linkages was analyzed to identify any linkages within the Dragonfly Claim Group boundaries.

All native birds found in the United States, with the exception of native game birds and non-native species, are protected under the Migratory Bird Treaty Act (MBTA). Wildlife surveys were conducted April 2 through 4, 2013. Bird species observed within the 12 drill hole and access road study areas included sage sparrow (*Amphispiza belli*), black-throated sparrow (*Amphispiza bilineata*), and lark sparrow (*Chondestes grammacus*). Other wildlife species observed include the Great Basin whiptail (*Cnemidophorus tigris tigris*), Great Basin gopher snake (*Pituophis catenifer*), and coyote (*Canis latrans*).

**Endangered and Special Status Species**

The BLM considers special status species to include the following:

- Federally Threatened or Endangered Species: Any species listed, proposed, or candidate considered for possible listing by the USFWS under the Federal Endangered Species Act (ESA)
- BLM Sensitive Species: 1) Species that are currently under status review by the USFWS; 2) Species whose numbers are declining so rapidly that federal listing may become necessary; 3) Species with typically small and widely dispersed populations; or 4) Species that inhabit ecological refugia or other specialized habitats; and
- State of California: State-protected animals that have been determined to meet BLM’s Manual 6840 policy definition.

The potential for sensitive wildlife species to occur was based on documented occurrences in various databases. Presence of suitable habitat was based on natural community mapping, soils, and topography.

The desert tortoise is a Federal and State Threatened Species. The study area is within the 1984 Desert Tortoise Range of the West Mojave Plan. The Dragonfly Claim Group is not located within USFWS Critical Habitat for desert tortoise. A total of four desert tortoises were observed during the general biological survey; however, two individuals were off-site and one individual was observed just outside the 5-acre buffer study area. A fourth individual was found outside the exploratory drilling study areas but within the Dragonfly Claim Group area and approximately 140 feet east of travel route EP103.

The Mohave ground squirrel is a State Threatened Species. No Mohave ground squirrels were observed within any of the drill hole study areas during the survey; however, numerous small mammal burrows were observed throughout the Dragonfly Claim Group. Due to the presence of
suitable habitat within the drill hole study areas, Mohave ground squirrel has the potential to occur on-site.

The burrowing owl is a BLM Sensitive Species (BLMS), a USFWS Bird of Conservation Concern (BCC), and a CDFW Species of Special Concern (SSC). The burrowing owl nests in underground burrows created by burrowing animals. Although no burrowing owls were observed during the biological survey, an empty burrowing owl burrow, which showed sign of presence with evidence of white wash (i.e., scat) and owl pellets, was observed within the Drilling Location 9 study area.

Other sensitive wildlife species with potential to occur within the Dragonfly Claim Group include: golden eagle (*Aquila chrysaetos*), prairie falcon (*Falco mexicanus*), loggerhead shrike (*Lanius ludovicianus*), Le Conte’s thrasher (*Toxostoma lecontei*), pallid bat (*Antrozous pallidus*), Townsend’s big-eared bat (*Corynorhinus townsendii*), spotted bat (*Euderma maculatum*), and American badger (*Taxidea taxus*). Foraging habitat for the golden eagle, prairie falcon, pallid bat, Townsend’s big-eared bat, and spotted bat occurs on-site; however, no nesting or roosting habitat for these species was identified within the Dragonfly Claim Group. None of these sensitive species were observed during the biological survey. However, due to the presence of suitable habitat within the Dragonfly Claim Group, these species potentially occur within the drill hole study areas.

### 3.5 Heritage Resources

The Dragonfly Claim Group is composed of six associated mining claims in an area measuring 3.9 km² (964.66 acres). The BLM, through informal consultation with the California Office of Historic Preservation, has determined that the Area of Potential Effect for the Proposed Action is the entire 964.66 acres of the claim group. For the purposes of the initial exploratory phase of the project, however, the BLM and the OHP have determined that only the Area of Direct Impact, which includes the exploratory drill sites and the access routes to those locations, would require a Class III Cultural Resources Inventory. Applied Earthworks, Inc. was contracted by the proponent to conduct Class III pedestrian inventory pursuant to Section 106 of the NHPA (36 Code of Federal Regulations [CFR] 800) consisting of five acres around each of the 12 drill locations and a 50 foot corridor along all access routes. The inventory of approximately 100 acres was completed in May 2013 (See Cultural Resource Report CA-650-2013-05).

The Dragonfly Claim Group is situated within the boundaries of the Last Chance Canyon Archaeological District (LCCAD). This resource, P-15-008676, has an NRHP status code of 1S, indicating this resource is listed on the National Register by the Keeper. It is also listed on the California Register of Historical Resources (CRHR). The NRHP Nomination Form dated 1971 indicates that the LCCAD is significant for its prehistoric and historic aboriginal occupation, extending from the Pleistocene to the 1870s (Apostolides 1971). While mining features were included in the recordation of sites at the time of the nomination in 1971, these features were considered as intrusive, and disturbances to the resource, rather than as resources themselves.
The LCCAD was placed on the NRHP in 1972. A Cultural Resource Management Plan for the LCCAD prepared by the BLM in 1980 (Moore and Strahan 1980:1) recognized that, in addition to the prehistoric and historic aboriginal occupation, “manifestations of Anglo history include representative examples of mining from the late 1800s to the present time.” Since then, historic-period mining related sites recorded within the boundaries of the LCCAD are considered contributing elements to the District eligible for inclusion on the National Register of Historic Places. Prior to the cultural resources survey reported conducted in 2013, there were no known cultural resources associated with the LCCAD located directly within the area of direct impact for the proposed project.

Class III pedestrian survey of the area of direct impact resulted in the identification and documentation of 36 newly recorded cultural resources; 35 of which are historical archaeological resources and one of which is multicomponent archaeological resource containing both historical and prehistoric constituents. These resources include: four historical dirt road segments; 23 sites containing one or more historical rock cairns (mining claim markers); three sites containing both mining claim markers and historical refuse; two historical prospect pits; two sites containing both claim markers and prospect pits; one site consisting of prospect pits, claim markers, and refuse; and one multicomponent site containing claim markers and a prehistoric lithic scatter (Table 3.5.1).
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Table 3.5.1 Cultural Resources Identified within the project area

Because the Dragonfly project area and the newly identified cultural resources occur within the LCCAD, all of the archaeological resources recorded during the cultural resources survey of the Project area, both historic and prehistoric, should be considered as contributing elements to the District, and historic properties eligible for NRHP inclusion.

3.6 Native American Values

Pursuant to federal regulations and BLM policy, the Ridgecrest Field Office initiated government to government consultation with Federally and non-Federally recognized Tribal groups in 2013. Consultation to date has included presentations and discussion at consultation meetings for the Big Pine Paiute, Timbi-sha Shoshone, and coordination meetings with several Kern Valley Indian communities at the Nuui Cuuni Center, which included representatives from the Kern Valley Indian Council, the Kern River Paiute Council, the San Manual Band of Mission Indians, the Tubatulabs of Kern Valley, and the Monache Intertribal Association. Formal consultation letters were sent to the Tribal governments and groups in Table 3.5.2. BLM hosted a field trip to the Dragonfly project area in April 2014. Representatives from the Kern Valley Indian Council and the Big Pine Paiute Tribe of the Owens Valley attended the trip.

Table 3.5.2 – Native American Tribes Consulted

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<td>Tejon Indian Tribe</td>
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Responses received from consulted Tribal government representatives and members to date indicate that all of the sites within the project area are considered sacred and should be treated as such; that resources should be avoided regardless of NRHP eligibility; that burials should be avoided; and that the BLM should endeavor to protection and preservation of resources for generations to come. Consultation will be on-going for this project.

3.7 Geological Resources

The area covered by this assessment includes Quaternary alluvium and gravels overlying basement rocks of hard, sedimentary rocks of the Goler Formation and Mesozoic quartz monzonites. Several small mines have been historically worked in the nearby area (Troxel and Morton, 1962). These include:

- The Copper Basin (in Section 14, one mile to the south), having quartz veins in quartz diorite. No production reported.
- The Boulder Placer (Section 3, one mile north) reportedly included gold-bearing Quaternary gravels capping local ridges between stream channels.

Gold has been historically prospected and produced from other areas near or adjacent to Last Chance
According to Troxel and Morton, 1962:

“... placer gold generally is most abundant in the lowermost part of Quaternary gravel on the sides of the stream beds or gulches. These gravels, or fanglomerate, contribute gold to smaller, but commonly rich, concentrations of placer gold accumulated in gullies downslope from the gravels.”


3.8 Recreation

The El Paso management area lies approximately 10 miles to the south of the communities of Ridgecrest and Inyokern and is located between highway’s CA 14 and US 395. Because of the El Paso’s close proximity to these two communities along with easy access from the highways it has made the area a popular recreational destination for both casual as well as organized recreational use including both motorized and non-motorized activities. In fiscal year 2013 this region of public lands received an estimated 58,000 visits. The area is visited by both local residents as well as people traveling from southern California and the central valley.

Some of the non-motorized recreational pursuits that occur within these areas include such activities as hiking, running, horseback riding, mountain biking, camping, hunting upland game birds, rock hounding/mineral collecting, and cultural site visiting. Motorized recreational uses include motorcycle touring, ATV riding, four-wheel driving, as well as general driving for pleasure. Additionally, Special Recreational Use Permits have been issued for such activities as endurance equestrian rides, dual sport motorcycle tours, and four wheel drive tours in this area. The status of designated BLM routes in the El Paso Mountains are available at Maps 7 and 8, Travel Management Area 7 of the West Mojave Route Network Project).

3.9 Visual Resources

The Federal Land Policy and Management Act of 1976 established that “… public lands would be managed in a manner which would protect the quality of the scenic (visual) values of these lands.”

Visual Resource Management (VRM) Classes are typically established during the land use planning process following a visual resource inventory. In the absence of established VRM classes and when planning a project interim VRM classes may be determined, using existing or updated VRM inventory data that conform to RMP land allocations (BLM Manual 8400.06(A)(3)). For this and the subsequent discussion below see Information Bulletin No. CA-2009-005.

The California Desert Conservation Area (CDCA) Plan of 1980 as amended recognizes the scenic values of the plan area as a definable resource and an important recreation experience. While the CDCA Plan did not determine Visual Resource Management Class areas it did specify the following related to visual resource management:
(1) The appropriate levels of management, protection, and rehabilitation on all public lands in the CDCA will be identified, commensurate with visual resource management objectives in the multiple-use class guidelines.

(2) Proposed activities will be evaluated to determine the extent of change created in any given landscape to specify appropriate design or mitigation measures using the Bureau’s contrast rating process.

The Dragonfly project site is within Multiple-Use Class L (Limited Use) lands. Multiple-Use Class L protects sensitive, natural scenic, ecological, and cultural resource values. Public lands designated as Class L are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not diminished.

Furthermore, a Visual Resource Inventory was completed by contractors in 2012 in anticipation of the Desert Renewable Energy Conservation Plan (DRECP) Amendment to the CDCA Plan. The Ridgecrest Field Office reviewed the results and forwarded its recommendation to the California State Office to classify lands within the Dragonfly project area as VRM Class II lands. Although the VRM Class II rating has not yet been formally adopted by the DRECP, it is consistent with the area’s current Multiple Use classification of Limited.

The objective of Class II is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

3.10 Range

The project is located within the ephemeral Cantil Common sheep grazing allotment. Sheep grazing may be permitted in a year where there is substantial growth of ephemeral forage, and when authorized, season of use is generally late spring, typically early April through late May.

The proposed drill sites are along the pathway through the mountains which is typically followed by sheep grazers. The quality of the forage is variable so one cannot quantify the amount of forage lost to drilling and areas which buffer the drilling. It would seem the loss of forage would be negligible in a good grazing year.

CHAPTER 4

ENVIRONMENTAL IMPACT ANALYSIS

4.1 Introduction
This section analyzes the impacts of the Proposed Action to those potentially impacted resources described in the affected environment Chapter 3, above.

Under NEPA, EAs must analyze and describe the direct and indirect effects of the proposed action and the alternatives on the quality of the human environment. Direct effects are those effects “…which are caused by the action and occur at the same time and place” and indirect effects are those effects “…which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.” (40 CFR 1508.8). Because it can be difficult to distinguish between direct and indirect effects, the BLM can describe the effects together. (BLM NEPA Handbook, H-1790-1, page 56) (BLM 2008).

This section also analyzes cumulative effects of the proposed action and alternative. Cumulative effects are “…the impact on the environment which results from incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (Federal or non-Federal) or person undertakes such actions (40 CFR 1508.7). To analyze the cumulative effects of a proposed action or alternative, the BLM must analyze the direct and indirect effects of the proposed action and alternatives together with the effects of other actions that have a cumulative effect. If an alternative would have no direct or indirect effects on a resource, there would be no cumulative effects of the action (BLM NEPA Handbook, H-1790-1, page 57) (BLM 2008).

**Past, Present, and Reasonably Foreseeable Future Actions**

This section identifies past, present, and reasonably foreseeable future actions that could contribute to cumulative effects. For each cumulative effects issue below, the BLM has identified a geographic and temporal scope. This is based on the geographic and temporal scope of the impacts of the proposed action and alternative. The effects of past and present actions are described in Chapter 3, Affected Environment, where relevant, as they contribute to the present conditions.

Where there are cumulative impacts for an individual resource area, relevant past, present, and reasonably foreseeable future actions are discussed in that section.

Although raised through public comments, this document does not consider the possibility of this exploration leading to further development as reasonably foreseeable. This is because the likelihood of future development cannot be assessed until the results of this drilling are complete. Any assumptions about future development would be speculative based on current information. Any future federal authorizations for development in this area would be subject to its own NEPA analysis.

### 4.2 Air Quality, Greenhouse Gas Emissions, Soil and Water (Hydrology)

**Air Quality**

**Proposed Action**

**Direct & Indirect Impacts**

Emissions from the Proposed Action will be minimal. No significant offsite impacts are anticipated. An increase in fugitive dust during wind storms could occur due to the soil disturbance as a result of the
Proposed Action. Vehicle use on the access road will generate PM10 emissions throughout the project. The drilling operations will generate PM10 emissions as the heavy equipment moves soil. All of these emission levels would be small and similar to average mobile point sources. The project as proposed does not exceed the de minimis emission levels and conforms to the SIP and no further conformity analysis or determination is necessary.

No Action
The No Action alternative would not authorize drilling, and would therefore eliminate any impacts on air quality.

Cumulative Effects
Because direct and indirect impacts to air quality would be minimal and localized for the Proposed Action, and would not occur for the No Action, these alternatives will have no cumulative effect on air quality, and further analysis is not needed.

Greenhouse Gas Emissions
Proposed Action
Direct & Indirect Impacts
The Proposed Action would not impact or contribute significantly to increase GHG emissions. The limited amount of pollutants resulting from the drilling exploration would not impede the BLM and the State of California from meeting the air quality objectives or reductions in GHG emissions.

No Action
The No Action alternative would not authorize drilling, and would therefore eliminate any potential impacts on GHG emissions.

Cumulative Effects
Because direct and indirect impacts to GHG emissions would be minimal for the Proposed Action, and would not occur for the No Action, these alternatives will have no cumulative effect on GHG emissions, and further analysis is not needed.

Soil & Water
Proposed Action
Direct/Indirect Effects
The proposed action limits vehicle travel and drilling activities to existing routes of travel, and therefore will limit direct effects on surrounding soil resources. Temporary fencing surrounding the worksite may cause some surface disturbance, however this is expected to be minimal. A small percentage of the soil cuttings may become airborne, however the proposed action calls for removing most of the drilled material offsite for analysis. Aside from concrete/cement slurry and/or bentonite chips, backfill will consist of imported clean sand and gravel or whatever import material the BLM prefers.

The proposed action has the potential to negatively affect both surface and groundwater resources in the adjacent area. Runoff from the drill site may carry contaminants down into Last Chance Canyon. Additionally, if the drill rig does encounter groundwater before reaching the desired hole depth, drilling materials may mix with the local groundwater. Impacts from mixing are expected to be minimal, however proper mitigation measures must be taken.
Cumulative Effects

The project is expected to have negligible cumulative effects on soil resources. There is however a potential to impact local surface and native groundwater resources in the project vicinity. The act of drilling may temporarily create a connection between surface and subsurface waters, if any, which connection would cease to exist when the hole is plugged.

Mitigation

The Proposed Action is subject to the reclamation and bonding requirements of 43 CFR 3809. Reclamation means taking any of several actions at the end of surface-disturbing operations in order to achieve conditions required by the BLM. Regulatory components of reclamation include, where applicable:

1. Isolation, control, or removal of acid-forming, toxic, or deleterious substances;
2. Regrading and reshaping to conform with adjacent landforms, facilitate revegetation, control drainage, and minimize erosion;
3. Rehabilitation of wildlife habitat;
4. Placement of growth medium and establishment of self-sustaining revegetation;
5. Removal of fencing and equipment;
6. Plugging of drill holes and closure of underground workings;

In addition to the above performance standards and the measures, mitigation should include:

- If groundwater is encountered the operator will provide BLM with information including the depth to water, total dissolved solids, and other pertinent information.
- All attempts will be made to prevent contaminating native groundwater by allowing any surface water or material to infiltrate the drill hole.
- As per the reclamation measures described in the Proposed Action, any drillhole that encounters ground water shall be plugged with a bentonite slurry or with bentonite pellets, with a five-foot cement plug at the surface to impede any entrance of surface water.

The above measures are expected to prevent any negative direct, indirect or cumulative impacts to soil and water resources.

4.3 Biological Resources

Proposed Action
**Vegetation and Special Status Plant Species**
Because all work will occur within existing dirt roads, vegetation will be avoided. No vegetation is proposed to be removed. Therefore, no direct or indirect impacts to vegetation will occur. The drilling rig vehicles will be washed prior to entering the project area and before leaving to minimize transport of non-native seeds.

**Wildlife and Endangered and Special Status Species**
All work will occur entirely within existing dirt roads which are already disturbed. Native habitats will be avoided and no vegetation is proposed to be removed. Therefore, no direct impacts to wildlife are anticipated. Exploratory drilling may have indirect impacts on wildlife as a result of human presence, noise, and vibrations. However, these disturbances would be temporary and are would not have an adverse impact on wildlife.

The proposed drilling locations, access roads, and staging areas all occur within existing dirt roads, some of which are BLM designated routes and others that are notes. All work will remain within the existing roadways. Project equipment (trucks/trailers/ etc.) will be restricted to existing roadways for all project activities (turn around or back out). In addition, two staging areas (i.e., where trucks/equipment will be loaded/off-loaded and/or parked) were identified and are contained entirely within existing roadways. Both staging areas have alternate BLM designated roadways adjacent to them to allow for continued traffic flow around the staging area while equipment is parked.

Within the Dragonfly Claim Group area, no obstacles to wildlife movement exist other than designated routes. In addition, the area is not considered to be a regional wildlife corridor. Furthermore, wildlife can easily move through the study area since the 12 drilling areas are small. Although some temporary disturbance to wildlife movement may occur, these disturbances are would have a negligible impact on wildlife movement.

Although no direct impacts will occur, if drilling is conducted during nesting season, indirect impacts to nearby nesting birds may occur from human presence, noise, and vibrations. Nesting activity generally occurs from March 1 (January 15 for raptors) to August 31. Disturbing or destroying active nests is a violation of the Migratory Bird Treaty Act (MBTA). To ensure compliance with the MBTA, the drilling project will implement mitigation measures- see below.

**No Action**
The No Action alternative would have no adverse impacts on any biological resources.

**Cumulative Effects**
Both the Proposed and No Action alternatives would no measurable cumulative impacts to any special status species or their habitats.

**Mitigation**
**Nesting Birds:** If possible, work will be conducted outside of the nesting season. If work must be conducted during nesting season, a pre-drilling survey will be conducted within 7 days prior to initiation of drilling activities to determine the presence of any active nests. To be in compliance with the International Migratory Bird Act, no birds may be harmed or killed. If active nests are located during pre-drilling surveys, drilling activities within 100 feet of the nest (200 feet for raptors) will be postponed or halted until the nest is vacated and juveniles have fledged, as determined by the Project biologist. Drill will be postponed if the biologist notes evidence of a second nesting attempt. Distance limits for drilling activities will be established to avoid an active nest. Limits will be defined with flagging, fencing, or other appropriate barriers and drilling personnel will be instructed about the sensitivity of nest areas. The project biologist should serve as a monitor during those periods when drilling activities will occur near (within 300 feet) active nest areas to ensure that no inadvertent impacts will occur. The results of the pre-drilling survey and the avoidance measures taken will be submitted to the BLM within 30 days of completion of the surveys and/or drilling activity monitoring.

**Desert Tortoise:** Desert tortoises were observed within the Dragonfly Claim Group area but not within the designated drill hole study areas. No direct impacts will occur to desert tortoise. To avoid indirect impacts (i.e., due to human presence, noise, and vibrations from drilling activities) to the desert tortoise, the exploratory drilling project will implement the following procedures and protocols:
A temporary tortoise-proof exclusion fence will be erected around each drill hole location, at least 100 feet long (50 feet in each direction of the drilling hole or the extent of the drilling equipment if asymmetric to the drill location) along each side of the road. Once the drilling rigs and trucks are in place, temporary exclusion fencing will be erected at the ends of the work area (i.e., perpendicular to the road) to ensure that no desert tortoise enters the work area while drilling is being conducted. All temporary tortoise-proof exclusion fencing should be secured at the bottom (e.g., partially buried or have straw wattle keyed in along the bottom) to ensure there are no gaps in the fencing and no wildlife can dig or crawl under the exclusion fencing.
When workers are entering the each drill hole work site, vehicles will drive no greater than 15 miles per hour within travel routes.
In addition to avoidance measures, the following stipulations will be followed:

a. Glacial Minerals shall designate a field contact representative (FCR) who will be responsible for overseeing compliance with stipulations and for communicating with the BLM. The FCR may be a crew chief or field supervisor or a contracted biologist. The FCR must be on-site during all drilling activities and must halt all drilling activities that are in violation of the stipulations. The FCR shall have a copy of all stipulations when work is being conducted on-site.

b. All persons who work on-site shall participate in a desert tortoise education program prior to initiation of field activities. The education program will be presented prior to conducting activities and may consist of a class presented by a qualified biologist or a video approved by the BLM.

c. No desert tortoises shall be handled as part of this project.

d. Burrows identified by the qualified biologist shall be avoided. Previously disturbed areas shall be utilized for the stockpiling of excavated materials, storage of equipment, and parking of vehicles.

e. No access road shall be bladed. The drilling crew manager shall flag the access route to avoid burrows and to minimize disturbance of vegetation.

f. Cross-country vehicle use by drilling crew is prohibited.
g. Within 90 days of terminating activities, the FCR shall submit a report documenting the effectiveness of the project protocols and also report any observations of desert tortoises.

h. If any injured or dead tortoise is found within the claim, the FCR will immediately notify the BLM Field Office. The information must include the date and time of the observation, location, a photograph, cause of death, and other pertinent information.

i. Project workers shall inspect under their vehicles before moving them to ensure that no tortoises are there. If a desert tortoise is present, the worker shall wait for the desert tortoise to move out from under the vehicle.

j. No dogs shall be allowed at a work site or within the drill hole study area.

k. All trash and food items shall be promptly contained within closed, raven-proof containers. These shall be removed from the area at the end of the day so that predators are not attracted to the area.

l. The excavated top 6-inches of soils removed during drilling shall be stockpiled. After drilling, the stockpiled soils shall be replaced back on the top portion of the drill holes.

m. After site rehabilitation, all tortoise-proof exclusionary fences shall be removed.

**Mohave ground squirrel:** The Mohave ground squirrel has the potential to occur within the Dragonfly Claim Group area due to the presence of suitable habitat and the observation of numerous small mammal burrows throughout the area. Because native habitats will be avoided and no vegetation is proposed to be removed, no direct impacts will occur to Mohave ground squirrel. To avoid indirect impacts (i.e., due to human presence, noise, and vibrations from drilling activities), the drilling project will implement the following procedures:

As noted, temporary exclusion fencing will be erected for desert tortoise. This fencing will be sized to exclude small-mammals in order to provide protection for the Mohave ground squirrel should any be present within the drill hole study areas. When considering types of tortoise-proof exclusion fencing to install, the Mohave ground squirrel’s size will be taken into account (i.e., a smaller mesh size or fencing with a solid barrier. Once the drilling rigs and trucks are in place, temporary exclusion fencing will be erected at the ends of the work area, perpendicular to the road, to ensure that no Mohave ground squirrels enter the work area while drilling is being conducted.

When workers are entering the project site, vehicles will drive no greater than 15 MPH within travel routes.

**Burrowing Owl:** No direct impacts will occur to burrowing owls. To avoid indirect impacts, the drilling project will implement the following procedures:
A pre-drilling survey will be conducted according to burrowing owl survey protocol no more than 7-days prior to ground disturbing activities.
  1) No disturbance will occur within 50 m (approx. 160 ft.) of occupied burrows during the non-breeding Season of September 1 through January 31.
2) No disturbance will occur within 75 m (approx. 250 ft.) during the breeding Season of February 1 through August 31. Avoidance also requires that a minimum of 6.5 acres of foraging habitat be preserved contiguous with occupied burrow sites for each pair of breeding burrowing owls or a single unpaired resident bird. These measures are taken from “BURROWING OWL SURVEY PROTOCOL AND MITIGATION GUIDELINES”, Prepared by: The California Burrowing Owl Consortium April 1993.

Other Sensitive Wildlife Species: A number of sensitive wildlife species have the potential to occur within the Dragonfly Claim Group area due to the presence of suitable habitat. These species include golden eagle, prairie falcon, loggerhead shrike, Le Conte’s thrasher, pallid bat, Townsend’s big-eared bat, spotted bat, and American badger. However, impacts will be negligible since all work will occur entirely within existing dirt roads and no vegetation is proposed to be removed. Drilling may have indirect impacts on sensitive wildlife species as a result of short-term disturbance, human presence, noise, and vibrations. However, these temporary disturbances would not have significant impacts on these species.

4.4 Heritage Resources

Proposed Action
Direct/Indirect Effects

Because the project area is located within the boundaries of the Last Chance Canyon National Register Archaeological District, the 36 newly identified historic properties identified during the Class III Cultural Resource inventory of the project both historic and prehistoric, should be considered as contributing elements to the District. All resources are considered historic properties eligible for inclusion to the National Register of Historic Places.

The current condition of the historic roads has been slightly impaired due to periodic maintenance and grading for modern use. However, the important aspects of the historical integrity such as location, design, setting, materials, feeling, and association, that convey the significance of these roads is retained in their present condition and current use. Disturbance to these resources during the proposed action is expected to be minimal; the disturbance created by drilling is estimated to be a few square feet, and all drill holes will be backfilled in accordance with BLM requirements and Kern County drill hole abandonment procedures upon completion.

The proposed action for the project as currently designed does not have the potential to alter these roads in such a manner that their integrity would be impaired, and no effects to these resources will occur as a result of the proposed action.

In accordance with the Criteria of Adverse Effect set forth in 36 CFR800.5, potential adverse effects to the archaeological resources recorded within the project area of direct impact have been assessed by applying the criteria developed by the Advisory Council on Historic Preservation (ACHP). Of the Criteria of Adverse Effect, none have been found to be applicable to the project as currently proposed.

The following conditions will apply:
1. No visual intrusions will be allowed after the rehabilitation of drill sites.
2. If visual intrusions remain after rehabilitation of the drill sites, the Last Chance Canyon Archaeological District will need to be re-evaluated under all four Criteria for inclusion on the National Register of Historic Places. No further work will be required if visual intrusions are no present after rehabilitation.

3. A cultural resource monitor shall be present during surface disturbing activities

Following the conditions above, the BLM, with informal concurrence from the Office of Historic Preservation, has determined that the proposed action will have no adverse effects to the essential character defining features of the historical properties identified within the project’s area of direct impact. The project will therefore will not affect those physical features that qualify them as contributing elements of the Last Chance Canyon Archaeological District and eligible for the NRHP.

No Action
Under the No Action alternative, surface disturbance would not occur. Historic properties identified as contributing to the Last Chance Canyon Archaeological District will not be impacted.

Cumulative Effects
Because there would be no direct or indirect effects to cultural resources following the stipulations described above, the No Action and Proposed Action will have no cumulative effect on cultural resources, and further analysis is not necessary.

Mitigation
Mitigation should include

- All ground disturbing activities must be confined to the areas surveyed as part of the Cultural Resource inventory project listed above. If moved from the inventoried area, work shall cease until additional cultural resource inventory and review is completed.

- In the event that any cultural resources (historic or prehistoric) are encountered during ground disturbing activities, work shall cease, discoveries should be left intact, and the BLM Authorized Officer shall be notified immediately.

- In the event of discovery of human remains, pursuant to Federal law and regulations (Archaeological Resources Protection Act (ARPA) 16 USC 470 & 43 CFR 7; Native American Graves Protection & Repatriation Act (NAGPRA) 25 USC 3001 & 43 CFR 10; and, Public Lands, Interior 43 CFR 8365.1-7), as well as California state law (California Health & Safety Code 7050.5, Dead Bodies and California Public Resources Code 5097.98, Notification of Discovery of Native American Human Remains), all work in the area will cease immediately, nothing will be disturbed, and the area will be secured. The County Coroner’s Office will be notified, as well as the BLM project archaeologist. Work may resume only with written authorization from the BLM Field Office Manager.

- Cultural & paleontological performance standards of Federal Regulation 43 CFR 3809.420(b)(8) (refer to Appendix 2).
4.5 Native American Values

Consultation and discussions with the tribes as described in Section 3.6 have revealed concern about the project and the impacts it may cause to cultural resources and landscapes near the project area, and the importance of El Paso Mountains to the Tribes, particularly if mining activities result from the proposed action. Because mining activity resulting from the Proposed Action or No Action Alternative is too speculative to analyze in this EA, those concerns were primarily outside the scope of this specific analysis. The BLM will continue to seek information and address concerns raised by the Tribes; government-to-government consultation is on-going at this time.

4.6 Geological Resources

**Proposed Action.**

*Direct and Indirect Impacts*

The act of drilling and removing samples will have no measurable impact to the rock formations in this area. However, drilling and sampling these claims will add to knowledge of the mineral resources in this area. It is not possible for BLM to determine whether these claims do, or do not contain a discovery of valuable minerals if no samples are gathered at depth from these claims.

Drilling and sampling may indirectly lead to knowledge of other resources besides locatable minerals. The BLM disposes construction material (ordinary rock, sand and gravel) under the Material Sales Act of 1947. Material disposals are allowed in lands classified for Limited Use, subject to the terms and policies of prevailing land use plans.

**No Action.**

*Direct and Indirect Impacts*

No impact to rock formations would occur under the No Action Alternative, but also no drilling data on subsurface geology would be generated.

**Cumulative Effects**

Both the above drilling alternatives will have no or negligible effect on the rock formations or mineral resources of these public lands, and thus no cumulative effects.

4.7 Recreation

**Proposed Action**

*Direct/Indirect Effects*

The proposed drilling sites are on both designated as well as undesignated existing routes. Those drill sites on designated routes of travel may have a temporary effect on all recreational users. Drill sites that
are located on the undesignated routes should only have an effect on the non-motorized recreationalist; since it is illegal for motorized vehicles to be on undesignated routes in Multiple Use Class “L” lands.

The proposed back to back parking of the drill truck and pipe truck along with fencing of the work site may result in the blocking of some of the narrower routes. The blocking of routes would result in recreational users needing to find a detour around these sites. On routes wider than 9 feet recreationalist may be able to get around without being impact very much in their pursuits. The need to reroute around a drill site may delay ones recreational pursuits but these impediments would not stop one from recreating and do not create a significant impact on one’s recreational opportunities.

The proposed length of the drilling operation and restoration effort is estimated to last 2 to 3 weeks in total length, while work on one particular site may last a day or two. Because of the short duration of the proposed action the impacts would be temporary and minimal in nature while the drilling and site rehabilitation is ongoing. Upon the completion of the overall drilling and site rehabilitation impacts to recreation would cease.

Cumulative Effects
None, if mitigation measures and reclamation requirements are met.
The Proposed Action alternative will have no cumulative effect on Recreation Resources.

Recommended Mitigation Measures
- Drilling operations shall not impede general public access and use of designated open routes.
- To the extent possible, operations on designated open routes shall be restricted from Monday noon until Friday noon. The operator shall avoid drilling-related operations on designated open routes during weekends and holidays.

1. To minimize conflicts with recreational users drill sites located on designated routes should be worked on Tuesday, Wednesday, or Thursday. Working these sites on these weekdays would lessen the potential for conflict with users since these days see fewer visitations than on Friday, Saturday, Sunday and Mondays.
2. Drilling activities should be planned during a three week time of year that does not have a federally recognized holiday to avoid conflicting with increased recreational use that happens over these time periods.
3. On designated routes temporary signs such as “Detour”, should be erected to direct traffic around the drill site to reduce the impact to recreationalist.
4. On undesignated routes temporary signs such as “Do Not Enter”, should be erected at the intersection with the designated route to discourage the public from traveling down these routes to inquire about the drilling activities.

No Action
Direct/Indirect Effects
The No Action alternative would not authorize drilling and would therefore eliminate any potential for impacts upon Recreation Resources.

Cumulative Effects
The No Action alternative will have no cumulative effect on Recreation Resources.
4.8 Visual Resources

Proposed Action

Direct/Indirect Effects

While the drilling operation is ongoing there will be an increase in vehicle traffic into the area on the existing routes along with the presence of the working drill rig to carry out the proposal. These effects would only be temporary and minimal in nature while the drilling and site rehabilitation is ongoing. Upon the completion of the overall proposal they would cease.

Cumulative Effects

The Proposed Action alternative will have no cumulative effect on Visual Resources.

Mitigation

Reclaim disturbance as described elsewhere in this chapter.

No Action

Direct/Indirect Effects

The No Action alternative would not authorize drilling and would therefore eliminate any potential for impacts upon Visual Resources.

Cumulative Effects

The No Action alternative will have no cumulative effect on Visual Resources.

4.9 Range

Proposed Action

Direct and Indirect Effects

The proposed action affects sheep grazing primarily as a safety hazard to the sheep and shepard if sheep were to intermingle with the drilling operations. Sheep in the area could get in the way of drilling equipment and create a hazard for both themselves and workers.

Cumulative Effects

The proposed action is not expected to have any cumulative effects on Range resources, as the work plan for the proposed project and grazing season of use are not expected to align.

Mitigation

The sheep grazing season is generally April and May if the annual forage is good. Sheep may be in the project site vicinity for about a week during that two month span of time. Communication is the key to
mitigation. BLM (Range) will inform the sheep operator of the drilling area and instruct him to avoid the site if drilling is occurring.

Drilling operators should notify their BLM contact (Minerals) of their potential activity in the area during the months of April and May. The BLM can put the sheep operator in contact with the drilling personnel to avoid conflicts. Temporary fencing of the drilling sites should not be necessary as long as there is adequate communication. Drill holes should be capped when not in use. Furthermore, drilling operators should try not to block the roads or leave enough space so sheep operators can water just off the roads.

**No Action**

**Direct and Indirect Effects**
There are no effects expected with the No Action Alternative.
CHAPTER 5
PERSONS, GROUPS, AND AGENCIES CONSULTED

5.1. List of Preparers

BLM Preparers

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Responsibility for the Following Sections of this Document</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randall Porter</td>
<td>Geologist - Project Lead</td>
<td>Geology,</td>
</tr>
<tr>
<td>Martha Dickes</td>
<td>Recreation Specialist</td>
<td>Wilderness, Recreation,</td>
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<tr>
<td>Shelley Ellis</td>
<td>Wildlife Biologist</td>
<td>ACEC, Bio-Crusts, Vegetation, Wildlife</td>
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<tr>
<td>Ashley Blythe</td>
<td>Archaeologist</td>
<td>Cultural Resources</td>
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<tr>
<td>Paul Rodriquez</td>
<td>Realty Specialist</td>
<td>Lands and Access</td>
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<tr>
<td>Jeff Gicklhorn</td>
<td>Natural Resource Specialist</td>
<td>Soil, Water, Air Quality, Vegetation, Greenhouse Gasses,</td>
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<tr>
<td>Craig Beck</td>
<td>Outdoor Recreation Specialist</td>
<td>Recreation, Visual Resources</td>
</tr>
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</table>

5.2 References


Daryl Koutnik, Principal of Biology; “Biological Assessment, Dragonfly Exploratory Drilling Project; El Paso Mountains, County of Kern, California”. Prepared For: Meridian Consultants Prepared By: PCR Services Corporation; May 2013.
APPENDIX 1

INTERDISCIPLINARY TEAM ANALYSIS RECORD CHECKLIST

INTERDISCIPLINARY TEAM CHECKLIST

Project Title: Exploratory Drilling of the Dragonfly Placer Claims
NEPA Log Number: DOI-BLM-CA-D050-2014-014-EA
File/Serial Number: CACA-53193
Project Leader: Randall Porter

DETERMINATION OF STAFF: (Choose one of the following abbreviated options for the left column)

NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for relevant impact that need to be analyzed in detail in the EA
NC = (DNA) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section D of the DNA form. The Rationale column may include NI and NP discussions.

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[Image: [Image 72x112 to 540x720]]
## FINAL REVIEW:

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APPENDIX 2

The performance standards of Title 43, Subpart 3809 of the Code of Federal Regulations are common to all alternatives. These regulations state:

§ 3809.420 What performance standards apply to my notice or plan of operations?

The following performance standards apply to your notice or plan of operations:

(a) General performance standards —

(1) *Technology and practices.* You must use equipment, devices, and practices that will meet the performance standards of this subpart.

(2) *Sequence of operations.* You must avoid unnecessary impacts and facilitate reclamation by following a reasonable and customary mineral exploration, development, mining and reclamation sequence.

(3) *Land-use plans.* Consistent with the mining laws, your operations and post-mining land use must comply with the applicable BLM land-use plans and activity plans, and with coastal zone management plans under 16 U.S.C. 1451, as appropriate.

(4) *Mitigation.* You must take mitigation measures specified by BLM to protect public lands.

(5) *Concurrent reclamation.* You must initiate and complete reclamation at the earliest economically and technically feasible time on those portions of the disturbed area that you will not disturb further.

(6) *Compliance with other laws.* You must conduct all operations in a manner that complies with all pertinent Federal and state laws.

(b) Specific standards —

(1) *Access routes.* Access routes shall be planned for only the minimum width needed for operations and shall follow natural contours, where practicable to minimize cut and fill. When the construction of access routes involves slopes that require cuts on the inside edge in excess of 3 feet, the operator may be required to consult with the authorized officer concerning the most appropriate location of the access route prior to commencing operations. An operator is entitled to access to his operations consistent with provisions of the mining laws. Where a notice or a plan of operations is required, it shall specify the location of access routes for operations and other conditions necessary to prevent unnecessary or undue degradation. The authorized officer may require the operator to use existing roads to minimize the number of access routes, and, if practicable, to construct access roads within a designated transportation or utility corridor. When commercial hauling is involved and the use of an existing road is required, the authorized officer may require the operator to make appropriate arrangements for use and maintenance.
(2) **Mining wastes.** All tailings, dumps, deleterious materials or substances, and other waste produced by the operations shall be disposed of so as to prevent unnecessary or undue degradation and in accordance with applicable Federal and state Laws.

(3) **Reclamation.** (i) At the earliest feasible time, the operator shall reclaim the area disturbed, except to the extent necessary to preserve evidence of mineralization, by taking reasonable measures to prevent or control on-site and off-site damage of the Federal lands.

(ii) Reclamation shall include, but shall not be limited to:

(A) Saving of topsoil for final application after reshaping of disturbed areas have been completed;

(B) Measures to control erosion, landslides, and water runoff;

(C) Measures to isolate, remove, or control toxic materials;

(D) Reshaping the area disturbed, application of the topsoil, and revegetation of disturbed areas, where reasonably practicable; and

(E) Rehabilitation of fisheries and wildlife habitat.

(iii) When reclamation of the disturbed area has been completed, except to the extent necessary to preserve evidence of mineralization, the authorized officer shall be notified so that an inspection of the area can be made.

(4) **Air quality.** All operators shall comply with applicable Federal and state air quality standards, including the Clean Air Act (42 U.S.C. 1857 et seq.).

(5) **Water quality.** All operators shall comply with applicable Federal and state water quality standards, including the Federal Water Pollution Control Act, as amended (30 U.S.C. 1151 et seq).

(6) **Solid wastes.** All operators shall comply with applicable Federal and state standards for the disposal and treatment of solid wastes, including regulations issued pursuant to the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.). All garbage, refuse or waste shall either be removed from the affected lands or disposed of or treated to minimize, so far as is practicable, its impact on the lands.

(7) **Fisheries, wildlife and plant habitat.** The operator shall take such action as may be needed to prevent adverse impacts to threatened or endangered species, and their habitat which may be affected by operations.

(8) **Cultural and paleontological resources.** (i) Operators shall not knowingly disturb, alter, injure, or destroy any scientifically important paleontological remains or any historical or archaeological site, structure, building or object on Federal lands.

(ii) Operators shall immediately bring to the attention of the authorized officer any cultural and/or paleontological resources that might be altered or destroyed on Federal lands by
his/her operations, and shall leave such discovery intact until told to proceed by the authorized officer. The authorized officer shall evaluate the discoveries brought to his/her attention, take action to protect or remove the resource, and allow operations to proceed within 10 working days after notification to the authorized officer of such discovery.

(iii) The Federal Government shall have the responsibility and bear the cost of investigations and salvage of cultural and paleontology values discovered after a plan of operations has been approved, or where a plan is not involved.

(9) **Protection of survey monuments.** To the extent practicable, all operators shall protect all survey monuments, witness corners, reference monuments, bearing trees and line trees against unnecessary or undue destruction, obliteration or damage. If, in the course of operations, any monuments, corners, or accessories are destroyed, obliterated, or damaged by such operations, the operator shall immediately report the matter to the authorized officer. The authorized officer shall prescribe, in writing, the requirements for the restoration or reestablishment of monuments, corners, bearing and line trees.

(10) **Fire.** The operator shall comply with all applicable Federal and state fire laws and regulations, and shall take all reasonable measures to prevent and suppress fires in the area of operations.

(11) **Acid-forming, toxic, or other deleterious materials.** You must incorporate identification, handling, and placement of potentially acid-forming, toxic or other deleterious materials into your operations, facility design, reclamation, and environmental monitoring programs to minimize the formation and impacts of acidic, alkaline, metal-bearing, or other deleterious leachate, including the following:

(i) You must handle, place, or treat potentially acid-forming, toxic, or other deleterious materials in a manner that minimizes the likelihood of acid formation and toxic and other deleterious leachate generation (source control);

(ii) If you cannot prevent the formation of acid, toxic, or other deleterious drainage, you must minimize uncontrolled migration of leachate; and

(iii) You must capture and treat acid drainage, or other undesirable effluent, to the applicable standard if source controls and migration controls do not prove effective. You are responsible for any costs associated with water treatment or facility maintenance after project closure. Long-term, or post-mining, effluent capture and treatment are not acceptable substitutes for source and migration control, and you may rely on them only after all reasonable source and migration control methods have been employed.

(12) **Leaching operations and impoundments.** (i) You must design, construct, and operate all leach pads, tailings impoundments, ponds, and solution-holding facilities according to standard engineering practices to achieve and maintain stability and facilitate reclamation.

(ii) You must construct a low-permeability liner or containment system that will minimize the release of leaching solutions to the environment. You must monitor to detect potential
releases of contaminants from heaps, process ponds, tailings impoundments, and other structures and remediate environmental impacts if leakage occurs.

(iii) You must design, construct, and operate cyanide or other leaching facilities and impoundments to contain precipitation from the local 100-year, 24-hour storm event in addition to the maximum process solution inventory. Your design must also include allowances for snowmelt events and draindown from heaps during power outages in the design.

(iv) You must construct a secondary containment system around vats, tanks, or recovery circuits adequate to prevent the release of toxic solutions to the environment in the event of primary containment failure.

(v) You must exclude access by the public, wildlife, or livestock to solution containment and transfer structures that contain lethal levels of cyanide or other solutions.

(vi) During closure and at final reclamation, you must detoxify leaching solutions and heaps and manage tailings or other process waste to minimize impacts to the environment from contact with toxic materials or leachate. Acceptable practices to detoxify solutions and materials include natural degradation, rinsing, chemical treatment, or equally successful alternative methods. Upon completion of reclamation, all materials and discharges must meet applicable standards.

(vii) In cases of temporary or seasonal closure, you must provide adequate maintenance, monitoring, security, and financial guarantee, and BLM may require you to detoxify process solutions.

(13) Maintenance and public safety. During all operations, the operator shall maintain his or her structures, equipment, and other facilities in a safe and orderly manner. Hazardous sites or conditions resulting from operations shall be marked by signs, fenced, or otherwise identified to alert the public in accordance with applicable Federal and state laws and regulations.