ENVIRONMENTAL ASSESSMENT

MENEFEE MINING CORPORATION

PROPOSED
BLACK SPRING HUMATE MINE

MCKINLEY COUNTY, NEW MEXICO

Prepared for:
BUREAU OF LAND MANAGEMENT
FARMINGTON FIELD OFFICE

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Environmental Services

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APPENDICES

1.0 INTRODUCTION

Menefee Mining Corporation proposes to permit 10 acres within an 80 acre parcel for the proposed Black Spring Humate Mine with the New Mexico Mining and Minerals Division. Menefee Mining Corporation would then enter a Mineral Material Sales Contract with the Bureau of Land Management, Farmington Field Office (BLM/FFO) for the extraction and sale of humate. The project area surface and mineral estate is administered by the BLM/FFO and is located in McKinley County, New Mexico (NM). Humate is an organic material contained within the Menefee geological formation (Shomaker and Hiss 1974). The proposed project would be located 24 miles southwest of Cuba and 5 miles south of Ojo Encino, NM.

This Environmental Assessment (EA) describes the pre-project environment and assesses potential impacts of the proposed action and the no action alternative. The direct and indirect, site-specific effects of the construction, operation, and reclamation of the proposed project are assessed. The impacts are analyzed for long-term and short-term consequences and cumulative impacts associated with the mineral materials mining operation. Mitigation measures are presented to minimize potential adverse effects from the implementation of the proposed action.

The proposed mine would not be located within a BLM Specially Designated Areas (SDA) or Areas of Critical Environmental Concern (ACEC).

1.1 Purpose and Need

The purpose of the proposed action would be to allow Menefee Mining Corporation to permit up to 10 acres of BLM/FFO administered land and minerals to mine humate. The minerals would be hauled to a processing plant for commercial sale. Menefee Mining Corporation would enter into a Mineral Materials Sales Contract with the BLM/FFO. Humate is an organic material obtained from soils produced by decomposition of plant or animal matter and is considered a mineable mineral material. Humate is typically used as a soil amendment. The permit would be issued for up to five years and for the removal of up to 10,000 tons of material. The estimated humate reserve within the 10-acre permit area is roughly 80,600 cubic yards (72,600 tons), assuming a consistent thickness of 5 feet and based on a density of 0.9 tons/cubic yard. Given an expected extraction rate of 8,000 to 10,000 cy of humate per year, the 10-acre Permit Area will take between eight and ten years to mine (1 to 1.25 acres per year). The BLM/FFO Sales Contract is for 10,000 tons (equivalent to approximately 11,111 cubic yards of humate), and at the stated mining rate new BLM contracts will be required annually.

1.2 Conformance with Applicable Land Use Plan and Other Environmental Assessments

Pursuant to 40 Code of Federal Regulations (CFR) 43 and 3600, this site-specific EA tiers to and incorporates by reference the information and analysis contained in the Farmington Proposed Resource Management Plan/Final Environmental Impact Statement (PRMP/FEIS) (BLM 2003a), which was approved as the Final Resource Management Plan for the FFO of the BLM by the Record of Decision (ROD) signed September 29, 2003 (BLM 2003b). The PRMP/FEIS and ROD are available for review at the FFO, Farmington, New Mexico or electronically at

http://www.nm.blm.gov/ffo/ffo_home.html. This EA addresses site specific resources and/or impacts that are not covered within the PRMP/FEIS, as required by the National Environmental Policy Act of 1969 (NEPA), as amended [Pub. L. 91-90, 42 United States Code (USC) 4321 et seq.]. The proposed project would not be in conflict with any local, county, or state plans.

1.3 Authorizing Actions and Relationship to Statutes and Regulations

This EA is prepared under the authority of the NEPA of 1969, (42 USC § 4321-4347) and federal regulations found in Council on Environmental Quality (CEQ) Regulations (40 CFR § 1500-1508).

The BLM/FFO issues contracts (Form 3600-9) for the removal of mineral materials managed under 43 CFR § 3600. These contracts and permits may be issued for up to five years and for the removal of up to 200,000 cubic yards of humate. A mining plan, a reclamation plan, hazardous materials waste management plan, storm water management plan, fire management plan and a weed management plan are required with the contract or permit application and must conform to modern mining and reclamation standards.

The proposed mine would be permitted with the New Mexico Mining and Minerals Division as required under the New Mexico Mining Act (Sections 69-36-1 through 69-36-20, NMSA 1978) and associated rules. The Mining and Minerals Division of the Energy, Minerals and Natural Resources Department is the administrative agency through which the application would be processed.

Multiple use, as mandated by the Federal Land Policy and Management Act (FLPMA) of 1976, requires that public lands be managed so that, "The use of some lands are for a combination of balanced and diverse resource uses that takes into account the long term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, wildlife and fish, etc …" (43 USC § 35).

Federal law mandates protection of some surface resources that are potentially affected by the development of the proposed action. Cultural resources threatened by development are protected by the Antiquities Act of 1906, [Public Law (PL) 52-209], the National Historic Preservation Act of 1966 (PL 89-665), and as amended (PL 52-209), and its regulations (36 CFR § 800), and other legislation including NEPA (PL 91-852), and its regulations (40 CFR § 1500 - 1508), the 1971 Executive Order No. 11593, the Archaeological and Historical Conservation Act of 1974 (PL 93-291), the Archaeological Resources Protection Act of 1979 (PL 96-95), and its regulations (36 CFR § 296), the American Indian Religious Freedom Act (48 USC § 1996), and the Native American Graves Protection and Repatriation Act of 1990. Compliance with Section 106 responsibilities of the National Historic Preservation Act are adhered to by following the BLM – New Mexico State Historic Preservation Office protocol agreement, which is authorized by the National Programmatic Agreement between the BLM, the Advisory Council on Historic Preservation, and the National Conference of Council of State Historic Preservation Officers, and other applicable BLM handbooks.

Under Section 402 of the Clean Water Act (CWA), as amended (33 USC 1251 et seq.), the U.S. Environmental Protection Agency (EPA) regulates storm water discharges for industrial and

construction activities under the National Pollutant Discharge Elimination System (NPDES) program. Additionally, Sections 404 of the Act, regulated by the U.S. Army Corps of Engineers, and Section 401 of the Act, regulated by the New Mexico Environment Department or U.S. Environmental Protection Agency (USEPA) (depending upon surface ownership), protect wetlands and waters of the U.S. Operators are required to obtain all necessary permits and approvals for projects requiring CWA permits prior to any disturbance activities.

Surface water resources are protected from oil pollution sources by the Federal Water Pollution Control Act (40 CFR § 112). The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 and other Federal regulations are designed to control the releases of hazardous materials into the environment and to direct the handling of response to accidental spills.

Threatened and endangered flora and fauna species are protected under the Endangered Species Act of 1973, as amended (PL 94-325). Additionally, the Migratory Bird Treaty Act (16 U.S.C. § 703-712) and the Eagle Protection Act (16 U.S.C. § 668-668d) protect other sensitive wildlife species potentially occurring in the proposed project area.

Executive Order 11312 of 1999, "Invasive Species," establishes measures to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological and human health impacts that invasive species cause. The Executive Order provides guidelines to Federal Agencies to contend with invasive species, to create an Invasive Species Council and to implement an Invasive Species Management Plan.

The Federal Plant Protection Act of June 2000, and the Federal Noxious Weed Act of 1974, Section 2814, provide for the control and management of non-indigenous weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or the public health. Section 2814 of the Federal Noxious Weed Act of 1974 provides for coordination between Federal agencies and the States, and provides that Federal agencies "shall enter into cooperative agreements with State agencies to coordinate the management of undesirable plant species on Federal lands." Sections 76-7-1 through 76-7-30, New Mexico Statutes Annotated (NMSA) 1978, "Noxious Weed Control Act" provides the district governing body to determine, with the advice of the county agent, which noxious weeds shall be subject to control; determine the method of control either by spraying, cutting, burning, tillage or any other appropriate method; prescribe the specific areas within the district on which the control measures are to be carried out; prescribe the period within which control measures are to be carried out. Sections 76-7D-1 through 76-7D-6, NMSA 1978, "Noxious Weed Management Act" provides for the Director of the New Mexico Department of Agriculture to: select the species of weeds to be targeted as noxious weeds for control or eradication; identify the methods to be used to control noxious weeds; and, develop publications to educate the public on the problem and prevention of noxious weeds.

Air quality standards in New Mexico are under the jurisdiction of the New Mexico Environment Department/Air Quality Bureau (NMED/AQB). The Environmental Improvement Act, NMSA 1978 and the Air Quality Control Act, NMSA 1978 dictate state air quality standards. Also, 40 CFR § 60 "Standards of Performance for New Stationary Sources" is administered by the

NMED/ABQ. Permits for crushing operations would be required from the NMED/AQB.

Executive Order 12898 of 1994, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires implementing procedures to insure that proposed projects within the auspices of Federal agencies do not result in disproportionate shares of negative environmental impacts affecting any group of people due to a lack of political or economic strength. Environmental justice requires, "...the fair treatment of people of all races, cultures, incomes, and educational levels with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." As such, this document includes an assessment of the impacts of the project on minority and low-income populations.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Alternative A - No Action

The BLM NEPA Handbook (H-1790-1) states that for EAs on externally initiated proposed actions, the No Action Alternative generally means that the proposed activity will not take place. This option is provided in 43 CFR 3600. The No Action Alternative would deny Menefee Mining Corporation the mining permit and Mineral Material Sales Contract. Current land and resource use would continue to occur in the proposed project area. No mitigation measures would be required. The No Action Alternative is included in this EA for comparison purposes between development and no development.

2.2 Alternative B - Proposed Action

The proposed Black Spring Humate Mine would be located approximately 24 miles southwest of Cuba and 5 miles south of Ojo Encino, NM. Menefee Mining Corporation has filed for a permit with the Mining and Minerals Division and has filed for a Mineral Material Sales Contract with the BLM/FFO to mine up to 10,000 tons (about 11,000 cubic yards) of humate from a 10-acre area located in the S ½ of the SW ¼ of Section 4, Township 19 North, Range 05 West New Mexico Principal Meridian (NMPM) in McKinley County, NM. Appendix A includes a project plat and locator maps of the proposed mine permit area. The proposed mine permit area is located on the Ojo Encino Mesa and Star Lake, NM U.S. Geological Survey (USGS) 7.5 minute quadrangles as shown on Figure 2 in Appendix A.

A total of 80 acres was surveyed and evaluated for the proposed action (refer to Figure 2 in Appendix A). Within the 80-acre parcel, Menefee Mining Corporation would permit 10 acres (refer to Figures 2 and 3 in Appendix A). Under the permit, Menefee Mining Corporation would mine approximately one acre per year for approximately five years. The BLM/FFO Sales Contract is for 10,000 tons (equivalent to approximately 11,111 cubic yards of humate), and at the stated mining rate new BLM contracts will be required annually.

When the proposed mine permit area has been played out, Menefee Mining Corporation may apply for another permit and sales contract to mine additional acreage within the 80-acre parcel, which may require additional environmental analyses and/or documentation at that time.

Disturbance associated with the proposed Black Spring Humate Mine would occur within a 10-acre permit area and would consist of several steps within three main stages to achieve removal of the humate resource and for reclamation. A site-specific Mining and Reclamation Plan has been prepared to accomplish proper extraction and reclamation. The Mining and Reclamation Plan is provided as Appendix B.

The total estimated mineable humate resource within the project area is approximately five feet in thickness and at a depth of zero to three feet deep throughout the project area. The total estimated humate resource within the initial 10-acres is approximately 80,600 cubic yards, based on a consistent five foot thick layer across the entire 10 acres. Total annual extraction from the mine is estimated to be 11,000 cubic yards. Mining operations would be conducted using moving reclamation as discussed below.

To properly access the site and deliver the humate to the processing facilities an existing two-track road approximately 1,770 feet in length and 20 feet wide would be upgraded. The road would be upgraded to BLM Gold Book Standards, and would result in approximately 0.8 acre disturbance.

Topsoil and overburden would be removed and stockpiled in designated locations within the mine permit area. Topsoil and overburden would be removed in 1-acre increments, with no greater than 2-acres of excavated topsoil and overburden stockpiled at any given time.

The humate would be removed using a front-end loader or trackhoe and loaded into a dump truck for delivery to the processing facilities in Cuba, NM. The anticipated number of truck loads would be four to five per day. The excavation portion of the mining operation would not disturb greater than 2-acres at a time.

The proposed mine would employee two full-time employees working eight-hour shifts, five days a week, weather-dependent, excluding holidays. Work would occur during daylight hours only. All vehicles would be restricted to haul roads and active mine operations.

Once the maximum amount of humate has been extracted from the first 1-acre (expected within one year), and as the mining operation moves into the third acre, reclamation of the first acre would be initiated (see Mining and Reclamation Plan for details). This moving reclamation pattern would continue through the entire excavation portion of the mining operation, leaving only 2-acres (maximum) of the mine site open at any given time. Once the resource within the permitted area has been exhausted, the entire mine area would be properly reclaimed and returned to a grazing land use area.

2.3 Alternatives Considered But Not Analyzed In Detail

Originally the SE ¼ of Section 4, Township 19N, Range 05W, NMPM was considered for the proposed action. Further investigations showed BLM designated potential mountain plover (*Charadrius montanus*) habitat and multiple natural resource concerns within that quarter section. An alternative permit area was chosen to minimize potential impacts to natural resources. As the original location would have resulted in greater environmental impact, it will not analyzed in detail and is eliminated from further consideration in this analysis.

3.0 DESCRIPTION OF AFFECTED ENVIRONMENT

This section describes the environment that would be affected by implementation of the alternatives described in Section 2.0. Aspects of the affected environment described in this section focus on the relevant major resources or issues. Only the aspects of the affected environment that are potentially impacted are described.

Field resource investigations of the 80-acre parcel for the proposed Black Spring Humate Mine were conducted on December 7, 2010 and January 19, 2011 by biologists from Ecosphere Environmental Services (Ecosphere). Cultural resource surveys were conducted by Woods Canyon on December 8 and 9, 2010 and January 25, 2011. A paleontological resource survey was conducted by Ecosphere on November 13, 2010.

3.1 Critical Elements

Certain critical environmental elements require analysis under BLM policy [see Appendix 5 of H-1790-1 (NEPA Handbook)]. These elements, listed in Table 1, are specified by statute, regulation, or Executive Order. Elements that do not exist in the project area or that do not have the potential to be impacted are eliminated from further analysis as indicated in the table. Those elements potentially impacted by the proposed action or alternatives are described in the following sections.

Table 1. Affected Environment and Basis for Determination of No Further Analysis of Critical Elements.

CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT				
Resources	**Located in Project Area**	**Not Located in Project Area**	**Further Analysis Presented in Text**	**Basis for Determination**
Air Quality	X		X	
Areas of Critical Environmental Concern (ACECs)		X		The proposed project area is not located in a BLM-designated ACEC.
Cultural Resources	X		X	
Native America Religious Concerns		X	X	No Native American Religious concerns have been identified (Jim Copeland BLM/FFO, per comm., January 5, 2011).
Environmental Justice	X		X	
Farmlands: Prime or Unique		X		There are no prime or unique farmlands within the project area.
Floodplains		X		No floodplains are located in the project area.
Invasive, Non-native Species	X		X	
Federally Threatened and Endangered Species		X	X	

CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT				
Resources	**Located in Project Area**	**Not Located in Project Area**	**Further Analysis Presented in Text**	**Basis for Determination**
Wastes: Hazardous or Solid		X	X	Due to the handling and storage of minor volumes of fuels and lubricants during excavation and processing, further analysis is warranted.
Water Quality: Surface or Groundwater		X	X	
Wetlands/Riparian Zones		X		No wetlands/riparian areas are located in the project area.
Wild and Scenic Rivers		X		There are no wild and scenic rivers in the project area.
Wilderness		X		The project area is located approximately 26.5 miles from the nearest Wilderness Area or Wilderness Study Area.

3.1.1 Air Quality

The proposed project is located in McKinley County, New Mexico. Additional general information on air quality in the area is contained in Chapter 3 of the Farmington PRMP/FEIS (BLM 2003a). In addition to the air quality information in the PRMP cited above, new information about greenhouse gases (GHGs), and their effects on national and global climate conditions has emerged since this RMP was prepared. On-going scientific research has identified the potential impacts of GHG emissions such as carbon dioxide (CO_2); methane (CH_4); nitrous oxide (N_2O); water vapor; and several trace gases on global climate. Through complex interactions on a global scale, GHG emissions may cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia (along with corresponding variations in climatic conditions), industrialization and burning of fossil carbon sources have caused GHG concentrations to increase measurably, and may contribute to overall climatic changes, typically referred to as global warming.

The 2003 PRMP discussed ozone in the Baseline Air Quality and Impact Assessment sections. The National Ambient Air Quality Standard (NAAQS) at the time was 0.084 ppm. In March of 2008, the EPA announced a new primary 8-hour standard of 0.075 ppm.

In addition, the EPA, on October 17, 2006, issued a final ruling on the lowering of the NAAQS for particulate matter ranging from 2.5 micron or smaller particle size. This ruling became effective on December 18, 2006, stating that the 24-hour standard for $PM_{2.5}$, was lowered to 35 ug/m³ from the previous standard of 65 ug/m³. This revised $PM_{2.5}$ daily NAAQS was promulgated to better protect the public from short-term particle exposure.

Air quality and climate are the components of air resources, which include applications,

activities, and management of the air resource. Therefore, the BLM must consider and analyze the potential effects of BLM and BLM-authorized activities on air resources as part of the planning and decision making process.

The USEPA has the primary responsibility for regulating air quality, including seven nationally regulated ambient air pollutants. Regulation of air quality is also delegated to some states of which New Mexico is one. Air quality is determined by atmospheric pollutants and chemistry, dispersion meteorology and terrain, and also includes applications of noise, smoke management, and visibility. Climate is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years. Greenhouse gases and the potential effects of GHG emissions on climate are not regulated by the USEPA, however climate has the potential to influence renewable and non-renewable resource management.

3.1.1.1 Air Quality

The area of the proposed action is considered a Class II air quality area. A Class II area allows moderate amounts of air quality degradation. The primary sources of air pollution are dust from blowing wind on disturbed or exposed soil and exhaust emissions from motorized equipment.

Air quality in the area near the proposed project is generally good and is not located in any of the areas designated by the USEPA as "non-attainment areas" for any listed pollutants regulated by the Clean Air Act. During the summers of 2000 through 2002, ozone levels in San Juan County were approaching non-attainment. Additional modeling and monitoring was conducted by Alpine Geophysics, LLC and Environ International Corporations, Inc., in 2003 and 2004. Results of the modeling suggest the episodes recorded in 2000 through 2002 were attributable to regional transport and high natural biogenic source emissions. The model also predicted that the region will not violate the ozone NAAQS through 2007 and that the trends in the 8-hr ozone values in the region will be declining in the future. At the present time, the San Juan County is classified as in attainment with the revised federal ozone standard of 0.075 ppm. Currently McKinley County is in attainment of all federal NAAQS.

Greenhouse gases, including CO_2 and CH_4, and the potential effects of GHG emissions on climate, are not regulated by the USEPA under the Clean Air Act. However, climate has the potential to influence renewable and non-renewable resource management. The USEPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks found that in 2006, total U.S. GHG emissions were over 6 billion metric tons and that total U.S. GHG emissions have increased by 14.1 percent from 1990 to 2006. The report also noted that GHG emissions fell by 1.5 percent from 2005 to 2006. This decrease was, in part, attributed to the increased use of natural gas and other alternatives to burning coal in electric power generation.

The levels of these GHGs are expected to continue increasing. The rate of increase is expected to slow as greater awareness of the potential environmental and economic costs associated with increased levels of GHG's result in behavioral and industrial adaptations.

3.1.1.2 Climate

Global mean surface temperatures have increased nearly 1.0°C (1.8°F) from 1890 to 2006 (Goddard Institute for Space Studies, 2007). However, observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

In 2007, the Intergovernmental Panel on Climate Change (IPCC) predicted a warming of about 0.2°C per decade for the next two decades, and then a further warming of about 0.1°C per decade. The National Academy of Sciences (2006) supports these predictions, but has acknowledged that there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures.

A 2007 US Government Accountability Office (GAO) Report on Climate Change found that, "federal land and water resources are vulnerable to a wide range of effects from climate change, some of which are already occurring. These effects include, among others: 1) physical effects such as droughts, floods, glacial melting, and sea level rise; 2) biological effects, such as increases in insect and disease infestations, shifts in species distribution, and changes in the timing of natural events; and 3) economic and social effects, such as adverse impacts on tourism, infrastructure, fishing, and other resource uses." It is not, however, possible to predict with any certainty regional or site specific effects on climate relative to the proposed action and subsequent actions.

3.1.2 Cultural Resources

The project is located within the archeologically rich San Juan Basin of northwestern New Mexico. In general, the prehistory of the San Juan Basin can be divided into five major periods: PaleoIndian (ca. 10000 B.C. to 5500 B.C.), Archaic (ca. 5500 BC to A.D. 400), Basketmaker II-III and Pueblo I-IV periods (A.D. 1-1540), and the historic (A.D. 1540 to present), which includes Native American as well as later Hispanic and Euro-American settlers. A detailed description of these various periods and select phases within each period is provided in the Farmington PRMP/FEIS (BLM 2003a).

The proposed permit area is within the Arroyo Chico subwatershed. Based on the Farmington PRMP/FEIS (BLM 2003a), a total of 1,733 sites representing PaleoIndian, Archaic, Basketmaker II, Basketmaker III, Unknown Anasazi, Anasazi Phase I, Anasazi Phase II, Anasazi Phase III, Anasazi Phase IV, Unknown Navajo, Dinétah/Gobernador, Cabezon, Reservation, Pueblo, Hispanic, Euro-Anglo, and general unknown temporal/cultural components have been documented within the watershed. The most frequently occurring cultural affiliations recorded are general unknown and Navajo Reservation Phase.

Woods Canyon Archaeological Consultants, Inc. (Woods Canyon) inventoried the proposed project area for archaeological and historic resources on December 8 and 9, 2010 and January

25, 2011 under permit number 49-2920-08-S. The inventory included an onsite field survey, literature search, agency consultation, and interview with Ojo Encino Chapter President Roger Toledo and a chapter member. An online literature search of Archeological Records Management Section (ARMS) was conducted to determine if any sites had been recorded within ¼ mile of the survey area. A search of the National Register of Historic Places (NRHP) and State Register of Cultural Properties was conducted, and Van Valkenburgh (1974) was consulted.

The literature search was conducted for a 0.25 mile radius around the project area. The results of the literature search found that 10 previous archeological surveys had been conducted and four previously recorded sites had been documented; LA34765, LA34767, LA34768, LA58974. Details are included in the Woods Canyon cultural resources report which has been submitted to the BLM under separate cover [NMCRIS Activity No.: 119716]. Site LA34767 is located along the proposed haul road upgrade and is officially eligible for the NRHP by the State Historic Preservation Office (SHPO). One new site was discovered within the project area; LA169209. The site was recommended as ineligible for registry with the NRHP.

3.1.3 Native American Religious Concerns

There are several pieces of legislation and executive orders that are considered in an evaluation of Native American Religious Concerns [i.e., American Indian Religious Freedom Act (AIRFA) of 1978, Executive Order 13007, The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990, and the Archaeological Resources Protection Act (ARPA) of 1979].

Traditional Cultural Properties (TCPs) are a separate class of cultural resources that may occur in the EA analysis area, may or may not coincide with archaeological sites and artifact loci, and may fall under the purview of one or more of the cited legislation. The National Park Service has defined TCPs as follows:

> A traditional cultural property can be defined generally as one (a property) that is eligible for the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. (National Register Bulletin 38)

For the proposed action, identification efforts for Native American Religious Concerns included reviewing existing published and unpublished literature and personal communications with Jim Copeland, BLM/FFO archaeologist. Woods Canyon met with Ojo Encino Chapter President, Roger Toledo and another chapter member, Watson Castillo, who had no information regarding TCPs within the project area. According to the BLM/FFO no known TCPs are located within the area (Jim Copeland, BLM/FFO, pers. comm., January 5, 2011).

3.1.4 Environmental Justice

Executive Order 12898 requires federal agencies to assess projects to ensure there is no disproportionately high or adverse environmental, health, or safety effects on minority and low income populations. Minorities comprise a large proportion of the population residing inside the

boundaries of the BLM/FFO (see pages 3-106 to 3-107 of the PRMP/FEIS for more details on ethnicity and poverty rates).

The proposed action would be developed approximately five miles south of Ojo Encino, NM.

3.1.5 Federally Threatened and Endangered Species

Under section 7 of the Endangered Species Act (ESA) of 1973, as amended, the BLM is required to consult with the U.S. Fish and Wildlife Service (USFWS) on any proposed action decision which may affect federally listed threatened or endangered species or species proposed for listing. According to the USFWS, there are seven federally listed threatened, endangered proposed threatened, or candidate species with the potential to occur in McKinley County, New Mexico. In February 2011, a Biological Survey Report (BSR) for the proposed action was prepared by Ecosphere. The BSR, provided as Appendix C, addresses the potential for federally listed and other special status species (Section 3.2.9) to occur in the project area. Table 2 summarizes the habitat descriptions and potential presence of federally listed species in the project area.

Table 2. Habitat Descriptions and Presence of USFWS Listed Threatened (T), Endangered (E), Proposed Threatened (P), or Candidate (C) species with Potential to Occur in McKinley County, New Mexico.

SPECIES	STATUS	HABITAT DESCRIPTION	PRESENCE[1]
Black-footed ferret (*Mustela nigripes*)	E	Open grasslands with year-round prairie dog colonies.	NP
Southwestern willow flycatcher (*Empidonax traillii extimus*)	E	Breeds in dense, shrubby riparian habitats, usually in close proximity to surface water or saturated soil.	NP
Yellow-billed cuckoo (*Coccyzus americanus occidentalis)*	C	Nests in cottonwood/willow riparian habitat with dense understory along rivers; rare in the San Juan valley	NP
Mexican spotted owl (*Strix occidentalis lucida*)	T	Nests in caves, cliffs, or trees in steep-walled canyons of mixed conifer forests.	NP
Mountain plover (*Charadrius montanus)*	**P**	**Breeds in flat, open grasslands; often associated with prairie dog towns and intensive grazing.**	**S**
Zuni bluehead sucker (*Catostomus discobolus yarrowii*)	C	Occurs in shady, cobbled and bedrock streams with frequent runs and pools.	NP
Zuni fleabane (*Erigeron rhizomatus*)	T	Piñon-juniper woodlands on steep, easily eroded sandstone slopes and clay banks, usually in close association with the Chinle and Baca formations. (7,200-8,300 feet). On the Navajo Nation, known to occur on soil derived from Chinle Formation in Chuska Mountains.	NP

[1] **K**- Known, documented observation within project area; **S** -Habitat suitable and species suspected to occur within the project area; **NS** -Habitat suitable but species is not suspected to occur within the project area; **NP**- Habitat not present and species unlikely to occur within the project area.

Potential breeding and nesting habitat for mountain plover (*Charadrius montanus*) is located within the project area, mainly the southeast quarter. As a federally proposed threatened species, there are no federal protective measures currently in place for this species. However, mountain plover has been designated as a BLM special management species which does provide protective management directives. Therefore, this species is discussed in detail in Section 3.2.9 Special Status Species.

3.1.6 Wastes: Hazardous or Solid

Minimal amounts of hazardous materials would be located on the project site in the form of oil, fuel, hydraulic fluids, and coolants. No chemicals subject to Superfund Amendments and Reauthorization Act (SARA) Title III in amounts greater than 10,000 lbs would be used. No extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities would be used. Non-hazardous solid waste generated at the proposed project area would be stored in appropriate containers and disposed of at an approved facility on an as needed basis. A hazardous materials plan is provide in Appendix B.

3.1.7 Water Quality: Surface and Groundwater

The project area is located in the Upper Colorado River Hydrologic Region and is part of the Arroyo Chico watershed unit. There are no parameters of concern identified for the Arroyo Chico watershed (BLM 2003a).

There are no perennial water resources, seeps, springs, or wetlands within the project area. An unnamed, undefined ephemeral drainage is located approximately 1,000 feet north of the 80-acre parcel as identified by the USGS National Hydrography Dataset (NHD). There are no defined ephemeral drainages within the proposed project area.

The primary aquifers in the project area are the Unita-Animas and the Mesaverde, which are sandstone based. Groundwater is readily available in most of the area and is of fair to poor quality (BLM 2003). A search of the New Mexico State Engineers Office - Water Administration and Technical Engineering Resource System (WATERS) database for the proposed project area and vicinity (5-mile radius) was performed. Twenty-two known water wells are located in a 5-mile radius of the proposed project area. The Encino Well (water) is located approximately 0.5 mile northwest of the project area and has a documented water level of 39.24 feet (WATERS database accessed 2011).

3.2 Non-Critical Elements

Non-critical elements are resources that may be affected by the proposed action or alternatives, but are not necessarily required to be analyzed by statute, regulation, or executive order. The non-critical elements listed in Table 3 are either eliminated from further analysis in the table or are brought forward in this EA for analysis because they pertain to management objectives outlined in the FFO PRMP/FEIS (BLM 2003a).

Table 3. Affected Environment and Basis for Determination of No Further Analysis of Non-Critical Elements.

NON-CRITICAL ELEMENTS				
Resources	**Located in Project Area**	**Not Located in Project Area**	**Further Analysis Presented in Text**	**Basis for Determination**
Topography/Surface Geology	X		X	
Mineral Resources	X		X	
Paleontology		X	X	There are no known paleontology resources within the project area.
Soils	X		X	
Watershed/Hydrology	X		X	
Vegetation, Forestry	X		X	
Livestock Grazing	X		X	Located within Star Lake Community Grazing Allotment.
Special Status Species	X		X	
Wildlife	X		X	
Wild Horse and Burros		X		There are no wild horse or burro populations in or near the project area.
Recreation		X		There are no designated recreational areas within the project area.
Visual Resources	X		X	
Noise	X		X	
Public Health and Safety	X		X	

3.2.1 General Topography/Surface Geology

The elevation throughout the project area ranges between 6,620 and 6,660 feet. The 80-acre project area is located within mildly rolling terrain with an overall south to southeast slope. The topographical slopes within the area range between 0-6 percent. The west three quarters of the project area contains the steeper slopes. The action area is relatively flat and gently rolling with slopes between 0-4 percent. There are no major topographical features within the action area. Little Blue Mesa is located approximately 1.25 miles southeast of the proposed project area.

Surface geology of the proposed project area is derived from the Kirtland and Fruitland Formations. The underlying layer of humate is derived from the Menefee Formation and is the desired material to be extracted.

3.2.2 Mineral Resources

The proposed action would access salable minerals from the mineral estate managed by the BLM/FFO. Salable minerals include common materials such as sand, gravel, rock, other fill material, humate, and coal. There are no coal mines within the vicinity of the project area; however there are other humate and sandstone (flagstone) mines within 10 miles of the project area. The surrounding area has been subject to a minor amount of oil and gas development.

3.2.3 Paleontological Resources

The proposed project area is located within the paleontological rich area of the San Juan Basin of northern New Mexico. The BLM uses the Potential Fossil Yield Classification (PFYC) system to identify areas with a high potential to produce significant fossil resources (IM 2008-009). This system has ranked all lands within the FFO management area as a Class 5 designation. Class 5 designations are described as being Very High Potential paleontological resource areas, thus requiring an assessment at the project level (IM 2008-011).

A paleontological resource survey was conducted by an Ecosphere permitted paleontologist on November 13, 2010. The results of the survey are detailed in Appendix D. No paleontological resources were identified during the field survey.

3.2.4 Soils

Soils in the FFO planning area consist of two kinds of parent material: alluvial sediment and sedimentary rock. Alluvial sediment is material that was deposited in river valleys and on mesas, plateaus, and ancient river terraces. The material has been mixed and sorted in transport and is widely ranging in mineralogy and particle size. Sedimentary parent material consists mainly of sandstone and shale bedrock. These shale and resistant sandstone beds form prominent structural benches, buttes, and mesas bounded by cliffs.

Soils in the proposed project area are classified as five major types; Tsosie-Councelor-Blancot, Calladito-Elias association, Councelor-Eslendo-Calladito complex, Starlake clay, and Badland. Table 4 lists the associated properties of the major soil mapping units within the proposed project area. Areas of bare ground occur throughout the project area. One large patch of bare ground covered with black gravel, approximately 1,000 by 500 feet, (11.5 acres) is in the southeast portion of the project area. The upgraded access road and the southeastern most corner of the project area lie along undulating sand dunes. The sand dunes along the haul road are partially stabilized and are light tan in color. The sand dunes within the southeastern corner of the project area are dark brown to black in color.

The northeastern corner of the project area lies on Tsosie-Councelor-Blancot fine sandy loams, 1 to 3 percent slopes. Tsosie-Councelor-Blancot is composed of 35 percent Tsosie and similar soils, 30 percent Councelor and similar soils and 20 percent Blancot and similar soils. Tsosie soils are a fan alluvium over stream alluvium derived from sandstone and shale and found on stream terraces on valley floors, and alluvial fans on valley sides. This soil type is well drained. Councelor soils are found on alluvial fans and valley sides and are derived from sandstone. This soil type is somewhat excessively drained and has a moderate available water capacity. Blancot

soil is found on fan remnants on valley sides, and is fan alluvium derived from sandstone and shale. The Blancot soil type is well drained with slopes between 1 and 3 percent.

A small portion, less than one acre, of the project area, near the junction of Star Lake Road and the proposed haul road upgrade would be located within the Councelor-Eslendo-Calladito complex. The Councelor-Eslendo-Calladito complex is composed of 30 percent Councelor and similar soils, 30 percent Eslendo and similar soils, and 25 percent Calladito and similar soils. These Councelor soils are found on alluvial fans and valley sides, and derived from sandstone. This soil type is somewhat excessively drained and has a moderate available water capacity. Eslendo soils are found on ridges and hills with slopes of 2-25 percent, and consist of slope alluvium over residuum weathered from sandstone and shale. It is a well drained soil with a very low available water capacity. Calladito soil is found on dunes on hills and ridges with slopes between 2 and 10 percent and is composed of eolian deposits derived from sandstone. This soil is excessively drained and has a low available water capacity.

The majority of the 80-acre plot, mainly the western half and mid portion, lies on Starlake clay, Starlake clay, 1 to 3 percent slopes, is found on fan remnants on valley sides, stream terraces on valley floors, and is fan and stream alluvium derived from sandstone and shale. This soil type is well drained and has a low available water capacity.

The proposed southeast corner is located on Badland soils. Badland is characterized by non-stony barren shale. This soil forms on uplands that are highly dissected with intermittent drainage ways. Runoff potential is high and geologic erosion is active. Due to very slow permeability, a large amount of water runs off after a normal rain, and flash floods follow heavy rains.

No evidence of biological soil crusts was observed in the project area.

Table 4. Major Soil Types Within the Project Area and Associated Properties.

SOIL TYPE	PARENT MATERIAL	SHRINK-SWELL POTENTIAL	ROOTING DEPTH	WATER EROSION POTENTIAL	WIND EROSION POTENTIAL
Councelor	Eolian deposits over fan alluvium derived from sandstone	Low	60 inches	High	High
Eslendo	Slope alluvium over residuum derived from sandstone and shale	Moderate	5- 20 inches	High	High
Calladito	Eolian material derived from sandstone; dunes on ridges and hills	Low	60 inches	High	High
Tsosie	Fan alluvium over stream alluvium derived from sandstone and shale	Low	80 inches	Moderate	Moderate
Blancot	Fan alluvium derived from sandstone and shale	Low	80 inches	Moderate	Moderate

SOIL TYPE	PARENT MATERIAL	SHRINK-SWELL POTENTIAL	ROOTING DEPTH	WATER EROSION POTENTIAL	WIND EROSION POTENTIAL
Starlake Clay	Fan and stream alluvium derived from sandstone and shale	Low	80 inches	Moderate	Moderate
Badland	Un-weathered to slightly weathered shale	Low	0-2 inches	High	High

3.2.5 Watershed/Hydrology

The proposed project would be within the Arroyo Chico watershed unit within the San Juan Basin, on the east side of the Continental Divide.

The 80-acre parcel northern boundary is located approximately 1,000 feet south of a USGS NHD unnamed ephemeral drainage. There are no perennial water resources, seeps, springs, or wetlands within the project area.

3.2.6 Vegetation

The project area is located within two main vegetation communities; Desert grassland and Great Basin Desert Scrub (Dick-Peddie 1993). The Desert grassland; community consists of blue grama (*Bouteloua gracilis*), galleta grass (*Pleuraphis jamesii*) with scattered saltbush (*Atriplex obovata*), with an estimated ground cover of 10-25 percent. The Great Basin Desert Scrub community is dominated by saltbush (*Atriplex obovata* and *Atriplex gardneri*), blue grama, galleta grass, alkali sacaton (*Sporobolus airoides*) and greasewood (*Sarcobatus vermiculatus*), with an estimated 5-15 percent cover. The area located within the sand dunes is Great Basin Desert Scrub; dominated by big sagebrush (*Artemisia tridentata*) with an understory of spiney muhley (*Muhlenbergia pungens*) and Greene's rabbitbrush (*Chrysothamnus greenei*), with an approximate 35-40 percent cover. The majority, 69 acres, of the 80-acre parcel is within Desert grassland community and has been heavily grazed by livestock. Areas of bare ground occur throughout the project area. One large patch of bare ground covered with black gravel, approximately 1,000 by 500 feet, (11.5 acres) is in the southeast portion of the project area. The Great Basin Desert scrub is found in the areas adjacent to and scattered within the black gravel. The proposed road upgrade and southeast corner of the parcel would be located within the Great Basin Desert Scrub along the sand dunes. A complete list of flora species observed in the project area can be found with the BSR in Appendix C.

3.2.7 Invasive, Non-native Species

The BLM/FFO maintains a list of invasive and non-native plant species of concern (BLM 2003*a*). There were no invasive or non-native BLM/FFO plant species identified within the project area during the December 2010 and January 2011 field surveys. A complete list of plants found during the field survey is included in the BSR in Appendix C.

3.2.8 Livestock Grazing

The proposed project is located within the BLM Star Lake Community grazing allotment. The Star Lake Community grazing allotment is managed to provide grazing opportunities for surrounding residents. The Bureau of Indian Affairs and BLM are responsible for the distribution of the allotment. Evidence cattle and horse use was observed during the January 2011 field surveys

3.2.9 Special Status Species

In accordance with BLM Manual 6840, the BLM manages certain sensitive species not federally listed as threatened or endangered in order to prevent or reduce the need to list them as threatened or endangered in the future. Included in this category are federal candidate species which receive no special protections under the ESA. Special status species and their potential to occur in the proposed project area are listed in Table 5. The BSR in Appendix C provides the basis for the findings listed in the table.

Table 5. BLM/FFO Species with Special Management Status and Potential to Occur in the Project Area.

SPECIES	HABITAT ASSOCIATIONS	PRESENCE [1]
Golden eagle (*Aquila chrysaetos*)	In the west, mostly open habitats in mountainous, canyon terrain. Nests primarily on cliffs and trees.	S
Ferruginous hawk *(Buteo regalis)*	Flat or rolling terrain in grasslands, shrub-steppes, and deserts; may occur in the periphery of piñon-juniper or other forests. Badlands. Prefers elevated nest sites (e.g., buttes, utility poles, trees) but also nests on the ground.	NP
Mountain plover (*Charadrius montanus)*	Breeds in flat, open grasslands; often associated with prairie dog towns and intensive grazing.	S
Prairie falcon (*Falco mexicanus*)	Found in arid, open grasslands and shrub-steppe habitats. Prairie falcons require cliffs for nesting.	S
American peregrine falcon (*Falco peregrinus anatum*)	Rugged terrain with rocky cliffs and canyons (30-1,000+ ft high), adjacent to rivers, lakes, or streams. Urban areas with towers and buildings are also inhabited.	NP
Burrowing owl *(Athene cunicularia)*	Rarely dig their own burrows and are typically associated with prairie dog colonies.	NP
Bald eagle (*Haliaeetus leucocephalus*)	Nests in forested areas adjacent to large bodies of water.	NP
Brack's hardwall cactus (*Sclerocactus cloveriae* ssp. *brackii*)	Sandy clay of the Nacimiento Formation in sparse shadscale scrub (5,000-6,000 ft).	NP

SPECIES	HABITAT ASSOCIATIONS	PRESENCE [1]
Aztec gilia (*Aliciella formosa*)	Salt desert scrub communities in soils of the Nacimiento Formation (5,000-6,000 ft).	NP

[1] **K** - Known, documented observation within project area; **S** - Habitat suitable and species suspected to occur within the project area; **NS** - Habitat suitable but species is not suspected to occur within the project area; **NP** - Habitat not present and species unlikely to occur within the project area.

The proposed project area does not provide suitable nesting habitat for sensitive raptor species. According to the BLM/FFO, the proposed site is within 14 miles of 17 recorded historic or currently active golden eagle (*Aquila chrysaetos*) and prairie falcon (*Falco mexicanus*) nests on public lands, one of which is within 2.5 miles (BLM 2009, unpublished data).

The flat nature of portions of the project area, along with the lack of vegetation within these areas, provides suitable nesting habitat for mountain plover. Approximately four acres within the 10-acre mine permit area is considered suitable habitat. There is one documented mountain plover nest and three documented observations of mountain plover within 5-miles of the project area (John Kendall, BLM/FFO, pers. comm., February 3, 2011). BLM-designated potential habitat for mountain plover is located approximately 0.5 mile northeast of the proposed 80-acre parcel.

3.2.10 Wildlife

The project area occurs in a desert grassland community. Desert-grassland communities support a variety of wildlife, including mammals, birds, and reptiles. Mammal species commonly occurring in desert grasslands may include black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), white-tailed prairie dog (*Cynomys leucurus*), kangaroo rat (*Dipodomys* spp.), deer mouse (*Peromyscus maniculatus*), pocket mouse (*Perognathus* spp.), kit fox (*Vulpes macrotis*), and coyote (*Canis latrans*).

Reptile species that may occur in the project area include collared lizard (*Crotaphytus collaris*), short-horned lizard (*Phrynosoma douglasii*), sagebrush lizard (*Scleroporus graciosus*), prairie lizard (*Scleroporus undulatus*), plateau striped whiptail (*Cnemidophorus velox*), bullsnake (*Pituophis melanoleucus*), and western rattlesnake (*Crotalis viridis*).

Wildlife or signs of wildlife, observed within and around the project area included black-tailed jackrabbit and kangaroo rat. A complete list of wildlife and wildlife sign observed during the field investigation of the project area is provided in the BSR (Appendix C).

3.2.11 Migratory Birds

Under the Migratory Bird Treaty Act (MBTA) (16 USC §703-712) and EO 13186, federal agencies are required to consider management impacts to migratory birds. While all migratory songbirds are protected by law certain species have been determined to be at greater risk than others. There are slightly over 350 avian species in San Juan County and the surrounding area. A total of 136 species have been confirmed as breeding in San Juan County with likely additional species if one considers the adjacent counties within the FFO area. While all

migratory songbirds are protected by law certain species have been determined to be at greater risk than others. Data collected through breeding bird surveys coordinated by the USFWS as well as other private sector efforts have provided the basis for the Partners in Flight (PIF) organization to develop bird "Watch Lists" and the USFWS's "Birds of Conservation Concern List". The proposed project area contains one of the habitat types addressed in these documents: Great Basin Desert Shrub (Sage/Grass). A sampling of some of the birds listed as "Highest Priority" by the PIF group includes gray vireo (*Vireo vicinior*), gray flycatcher (*Empidonax wrightii)*, sage sparrow (*Amphispiza belli*), and sage thrasher (*Oreoscoptes montanus)*. The USFWS' list of "Birds of Conservation Concern" includes the gray vireo and sage sparrow.

Desert-grassland habitats support a unique suite of avian species. Birds that may nest in desert grassland habitats in McKinley County include horned lark (*Eremophila alpestris*), sage thrasher (*Oreoscoptes montanus*), vesper sparrow (*Pooecetes gramineus*), Brewer's sparrow (*Spizella breweri*), sage sparrow (*Amphispiza belli*), and western meadowlark (*Sturnella neglecta*). Other species may utilize desert grassland habitats during the non-breeding season and may include mourning dove (*Zenaida macroura*), Gambel's quail (*Callipepla gambelii*), mountain bluebird (*Sialia currucoides*), lark sparrow (*Chondestes grammacus*), and dark-eyed junco (*Juncus hyemalis*). The open grasslands of the project area and vicinity also offer potential foraging habitat for several raptor species such as golden eagle, red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), and prairie falcon; however, there are no suitable nest substrates in the project area or immediate vicinity. No raptors or signs of raptor use were observed during the biological field surveys.

3.2.12 Visual Resources

Visual Resource Management (VRM) on public lands is conducted in accordance with BLM Handbook 8410 and BLM Manual 8411. Further details of the FFO VRM Program are contained on pages 2-9 to 2-10 and 3-61 to 3-63 of the Farmington PRMP/FEIS. The proposed project area is designated as VRM Class III. The Class III VRM designation allows for partially retaining the existing character of the land with moderate changes that may attract attention, but should not dominate the views. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements of the surrounding landscape.

3.2.13 Noise

Noise levels are measured utilizing instruments that are calibrated to measure decibels adjusted (dBA). The dBA scale is a measure of sound levels that are present at a given location that would be audible to the human ear. The dBA scale does not measure the levels of noise that may be present at a given location that would not be audible to the human ear, generally not measuring extremely low range noise and not measuring high pitched sounds. Some urban noises that represent the range of noise levels that are commonly heard are provided in Table 6.

Table 6. Examples of General Noise Levels in Common Activity Areas.

Noise Generator	General Noise Level (dBA)
Construction Site	85
Pick-up Truck	80
Automobile	65
Residential Area (daytime)	50
Residential Area (nighttime)	45
Rural Area (nighttime)	35
Hearing threshold	20

The BLM's noise standard used to determine compliance with the BLM/FFO's Notice to Lessee for Noise is 48.6 dBA based on a distance of 300 feet from the source of noise on a 24-hour A-weighted equivalent sound level (Leq) (BLM 2003). There is an existing homesite located approximately 0.3 mile southeast of the project area; however it was unoccupied during the time of the field surveys.

3.2.14 Public Health and Safety

The proposed humate mine would be located 1,770 feet west of an existing public access road. The dirt roads in the project area vicinity can be hazardous for travel during inclement weather. There are scattered residences within five miles of the project area, one of which is southeast of the project area; however it was un-occupied during the field surveys. Open pits and heavy machinery would be used at the mine site. Dump trucks (haul trucks) would be used to transport the humate to the processing facilities, averaging four to five loads a day. Figure 5 in Appendix A shows the travel route the haul trucks will use to deliver the humate to the processing facility. The route used consists of dirt roads as well as paved. The trucks would cross the major intersection of Highway 550 at an intersection without a stop light during transportation.

Extraction of humate disturbs the soil and blowing winds may transport the soil and fine humate particles. Humate is an organic substance and exists within the surrounding area as topsoil in some areas.

Hazardous materials would be located on the project site in the form of oil, fuel, hydraulic fluids, and coolants. The accidental release of these substances poses a potential threat to project area resources and local health and safety. The operation of the proposed mine will comply with all Mine Safety and Health Administration (MSHA) requirements for mine operations. The regulations can be reviewed in the Title 30 of the Code of Federal Regulations, Parts 1-199 or http://www.mshahelp.com/msha-answers/MSHA-Rules/standards-regulations.cfm.

4.0 ENVIRONMENTAL CONSEQUENCES

Environmental resources can be affected in many ways during implementation of the proposed action. The effect, or impact, is defined as any change or alteration in the pre-existing condition of the environment produced by the proposed action, either directly or indirectly. This chapter analyzes the environmental consequences of the proposed action.

Impacts can be either long-term (permanent, residual) or short-term (incidental, temporary). Short-term impacts affect the environment for only a limited time period and the environment usually reverts rapidly to the pre-disturbance condition. Short-term impacts are often disruptive and obvious. Long-term impacts are substantial and permanent alterations to the pre-project environment. The BLM defines long-term impacts as those impacts whose results endure more than five years. Impacts may be irreversible or residual and affected resources irretrievable.

For the purpose of this EA, potential impacts have been divided into three categories:

> **High** - as defined in CEQ guidelines (40 CFR 1500-1508), impacts which are substantial in severity and therefore should receive the greatest attention in decision-making.
>
> **Moderate** - impacts which cause a degree of change that is easy to detect, but do not meet the criteria for significant impacts.
>
> **Low** - impacts which cannot be easily detected and cause little change in the existing environment.

No Action Alternative

Under the No Action Alternative, the permit would be denied and the proposed Black Spring Humate Mine would not be developed. There would be no new impacts from mining humate in the project area. The No Action Alternative would result in the continuation of current land and resource use in the project area. This alternative will not be evaluated further in Section 4.0.

Action Alternative - Proposed Action

Under the Action Alternative, the Black Spring Humate Mine would be developed as proposed, with mitigation measures to reduce potential impacts to the environment. At an expected extraction rate of 8,000 to 10,000 cubic yards of humate per year, approximately 50,000 cubic yards of material could be removed from the project area over the 5-year contract time with a maximum surface disturbance of 10 acres for mining and overburden and topsoil storage, and 0.8 acre for the access road upgrade. The applicant estimates approximately 80,600 cubic feet of material is in reserve within the 10-acre permit area. The BLM/FFO Sales Contract would be for 10,000 tons (equivalent to approximately 11,111 cubic yards of humate), and at the stated mining rate new BLM contracts will be required annually. The proposed mine would employee two full-time employees working eight-hour shifts, five days a week, weather-dependent,

excluding holidays. Work would occur during daylight hours only. All vehicles would be restricted to haul roads and active mine operations. Once areas are reclaimed, no vehicles would be operated within the reclaimed areas except for restoration maintenance or rehabilitation activities. When the proposed mine permit area has been played out, Menefee Mining Corporation may apply for another permit to mine additional acreage within the 80-acre parcel, which may require additional environmental analyses and/or documentation at that time. Refer to Chapter 2 for a more detailed discussion of mining activities. The potential environmental consequences and proposed mitigation measures for this alternative are described for both critical and non-critical elements in the following sections.

4.1 Air Resources

4.1.1 Direct and Indirect Effects

The following equipment would be used throughout the life of the project; one Cat D6 bulldozer and one Cat 980 front-end loader, and one dump truck. Since the site would only employee two people, a maximum of two pieces of equipment would be operated at one time, throughout an eight-hour day, five days a week. No processing equipment would be located on site. Traffic levels would increase by approximately five to six vehicle trips per day in the proposed project area.

4.1.1.1 Air Quality

Air quality would be directly impacted with pollution from exhaust emissions and dust. Air pollution from the motorized equipment and dust dissemination would continue for the duration of mining and reclamation activities. Impacts from emissions and dust would generally be localized to the project area. Other factors that currently affect air quality in the area include dust from livestock herding activities, dust from recreational use, dust from use of roads for vehicular traffic, and emissions from oil and gas production activities. The significant threshold for particulate matter of 35 ug/m³ daily $PM_{2.5}$ NAAQS is not expected to be exceeded under the proposed action alternative. Impacts to air quality attributable to this project would be low and short to long-term.

4.1.1.2 Climate

No impacts to the climate are anticipated as a result of this project.

4.1.2 Mitigation

The FFO has been a participant of the Four Corners Air Quality Task Force (FCAQTF) since its inception back in 2002 when it was known as the Four Corners Ozone Task Force. Because of the unanswered questions raised by these modeling efforts, the FCAQTF has continued to look at air quality issues in the Four Corners region. The FCAQTF is comprised of a broad base of representatives including federal, state, Indian, and local governments, as well as industry, interest groups, and concerned community members. The FCAQTF has several working groups, which worked on the development of a mitigation options report (completed December 2007), to serve as a resource and guide to the regulatory agencies. The responsible agencies may use the report as the basis for developing air quality management plans for the region. This may include

developing new and revising existing regulations, supporting new legislation, developing new outreach and information programs, and developing and/or expanding voluntary programs for emission reductions.

The BLM's regulatory jurisdiction over authorized activities on federal lands has resulted in the development of "Best Management Practices" (BMPs) designed to reduce impacts to air quality. Typical measures may include: require that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored; revegetate areas of disturbed land, and water dirt roads during periods of high use in order to reduce fugitive dust emission. The site will be watered every other day and twice a day during strong winds to minimize wind erosion and dust dispersal. Operations will occur only during daylight hours. Minimal amounts of equipment will be used to accomplish the mining operations.

4.2 Cultural Resources

Previously documented cultural resources were identified during the literature search performed by Woods Canyon. One newly discovered site was identified during the field investigations; however the site was deemed ineligible for registration with the NRHP. One previously recorded site, officially deemed eligible for the NRHP, is located along the proposed haul road upgrade.

4.2.1 Direct and Indirect Impacts

The site deemed ineligible for registration with the NRHP may be destroyed by the proposed action, which would directly impact the artifacts within the site. No additional direct or indirect impacts to cultural resources are expected as a result of the proposed project if proper mitigation measures are followed. A cultural resources determination of effect for the proposed action will be issued by FFO/BLM archaeologists.

4.2.2 Potential Mitigation

A 560 foot section of the proposed haul road will be relocated approximately 180 feet southwest of its current path to avoid site LA34767. A T-post fence with either wire strands or orange safety fence will be placed along the 560 foot section of the existing two-track, to avoid the site. No protection measures are recommended for site LA169209. If previously undocumented cultural sites are encountered during construction, all activities will stop in the vicinity of the discovery and the BLM will be immediately notified. The site will then be evaluated. Mitigation measures such as data recovery may be required by the BLM to prevent impacts to newly identified cultural resources.

4.3 Native American Religious Concerns

4.3.1 Direct and Indirect Impacts

The proposed action is not known to physically threaten any TCPs, prevent access to sacred sites, prevent the possession of sacred objects or interfere or otherwise hinder the performance of traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act or EO13007. Currently, no known remains fall within the purview of the NAGPRA or the ARPA.

4.3.2 Potential Mitigation

No site-specific mitigation measures for Native American religious concerns have been recommended. In the event of any discoveries during project implementation, the BLM will be notified.

4.4 Environmental Justice

In compliance with Executive Order 12898, this assessment determined that the proposed action is not expected to result in disproportionate shares of negative environmental impacts affecting any group of people due to a lack of political or economic strength. Development of the proposed action is not expected to result in negative impacts to minority or low income populations.

4.4.1 Direct and Indirect Impacts

No minority or low income populations would be directly affected in the vicinity of the proposed action.

4.4.2 Potential Mitigation

No site-specific mitigation measures for environmental justice are recommended.

4.5 Federally Threatened and Endangered Species

Of the seven USFWS listed species with potential to occur in McKinley County, mountain plover is the only species with potential habitat located within the project area. Mountain plover is currently proposed threatened by the USFWS. No other USFWS listed species, or potential habitats, were found in the project area.

4.5.1 Direct and Indirect Impacts

FFO reviewed and determined that the proposed action is in compliance with listed species management guidelines outlined in the September 2002 Biological Assessment (Cons. No. 2-22-01-I-389). No further consultation with the USFWS is required.

4.5.2 Potential Mitigation

Surveys for breeding or nesting mountain plover will be conducted prior to ground disturbing activities within potential habitat, should mining commence in the area between April and July. Surveys will be conducted per the BLM/FFO desired protocol. If nesting mountain plover are discovered within the project area during the surveys the starting point of the mining activities will be moved to an area of unsuitable habitat or unoccupied habitat within the 80-acres that is outside of the ¼ mile buffer zone or separated by topography that would aid in minimizing impacts to the nest (personal comm. John Kendall, BLM March 28, 2011).

4.6 Wastes: Hazardous or Solid

Minimal amounts of hazardous materials would be located on the project site in the form of oil, hydraulic fluids, and coolants and would be brought to the site as needed and not stored onsite overnight. No chemicals subject to SARA Title III in amounts greater than 10,000 lbs would be used. No extremely hazardous substances as defined in 40 CFR 355 in threshold planning quantities would be used

4.6.1 Direct and Indirect Impacts

The accidental release of small amounts of oil, fuel, hydraulic fluids, or coolants poses a potential threat to project area resources. Impacts to the environment due to hazardous wastes would be low and short to long-term.

4.6.2 Potential Mitigation

All hazardous substances will be handled and disposed of according to federal law. Non-hazardous solid waste generated at the proposed project area will be stored in appropriate containers and disposed of at an approved facility on an as needed basis. The attached hazardous materials plan will be followed (Appendix B).

4.7 Water Quality: Surface and Groundwater

There are no perennial water resources, seeps, springs, or wetlands within the project area. The proposed humate mine is located 1,000 feet southwest of an ephemeral drainage. There are no defined ephemeral drainages within the proposed project area. Based on a maximum depth of overburden and humate thickness of up to about eight feet and the depth to groundwater in the area, the proposed project would not be expected expose any groundwater resources.

4.7.1 Direct and Indirect Impacts

The proposed action would over a 5-year period expose a maximum of approximately 10 acres of soils for mining and 0.8 acres for the access road upgrade. Topsoil and overburden will be removed in 1-acre increments, with no greater than 2-acres of excavated topsoil and overburden stockpiled at any given time. Given the lack of topographic relief and drainageways in the project area, no changes in drainage patterns would be expected following reclamation. Impacts to water quality would primarily be associated with runoff following storm events. The impacts to surface water quality due to increases in sediment would be low as the surface water present in the general vicinity of the project area is ephemeral. Impacts to water quality would persist for the life of the mine and until the disturbed areas are fully reclaimed.

4.7.2 Potential Mitigation

The proposed haul road will be upgraded to Gold Book Standards to ensure effective cross-drainage. An 18-inch diameter culvert will be installed where the haul road crosses the existing bar ditch on the east side of Star Lake Road. Proper reclamation will be initiated and will follow the Mining and Reclamation Plan (Appendix B). Reclamation will occur in stages to eliminate having excessive amounts of soils disturbed at one time. A Stormwater Pollution Prevention

Plan (SWPPP) will be implemented to minimize erosion and subsequent impacts to water quality. Vehicles will be regularly inspected for leaks.

4.8 General Topography/Surface Geology

The proposed mining area is located in a generally level area. There are no prominent topographical features within or near the proposed project area.

4.8.1 Direct and Indirect Impacts

The removal of up to approximately 80,600 bank cubic yards of humate from the initial 10 acre project area is not expected to result in any subsidence or other noticeable topographical changes. Impacts to the project area topography would be low and long-term.

4.8.2 Potential Mitigation

Moving reclamation will be implemented. The mine will be mined 1-acre at a time and then that acre will be reclaimed prior to mining of the next acre. Reclamation will help to minimize the minor impacts to topography. The attached Mining and Reclamation Plan will be implemented to avoid or reduce impacts (Appendix B).

4.9 Mineral Resources

The proposed surface mine would extract the mineral resource humate for commercial sale by Menefee Mining Corporation. Based on estimates of the amount of humate in the area, approximately 50,000 bank cubic yards of the resource could be extracted over the 5-year permit timeframe.

4.9.1 Direct and Indirect Impacts

Impacts to salable mineral resources through the mining of humate would be low to moderate. The proposed action would allow the extraction, sale and use of the minerals located in the project area, which would be an irretrievable commitment of resources.

4.9.2 Potential Mitigation

No mitigation measures for mineral resources are recommended.

4.10 Paleontology Resources

The Kirtland and Fruitland Formation found within the proposed project area are known to contain any paleontological resources. No fossils were found to occur within or proximate to the proposed project area. The Paleontological Report is provided as Appendix D.

4.10.1 Direct and Indirect Effects

Although no paleontological resources are known to occur within the proposed project area, impacts to paleontological resources from the proposed project implementation could possibly occur. Direct impacts of the proposed project to fossil localities could result from the ground

disturbing activities or the disturbance of the stratigraphic context in which they are located. This project could also create indirect impacts to areas by changing erosion patterns. An increase in human activity in the area could increase the possibility of unauthorized removal or other alterations to paleontological resources in the area. Potential impacts to paleontological resources as a result of the proposed action would be low and long-term.

4.10.2 Mitigation Measures

If unknown paleontological resources are encountered at the site, all BLM/FFO paleontological resources stipulations will be followed as indicated in the Condition of Approvals (COAs). These stipulations may include, but are not limited to temporary or permanent fencing or other physical barriers, monitoring of earth disturbing construction, project area reduction and/or specific construction avoidance zones, and employee education. Upon review, a determination for final project clearance and stipulations shall be issued by the BLM/FFO.

If previously undocumented paleontological sites are encountered during construction, all activities shall stop in the vicinity of the discovery and the BLM will be immediately notified. The site will then be evaluated. Mitigation measures such as data recovery may be required by the BLM to prevent impacts to newly identified paleontological resources.

4.11 Soils

Soils in the proposed mine permit area have a moderate to high wind and water erosion potential.

4.11.1 Direct and Indirect Impacts

A maximum of approximately 10 acres of soil could be disturbed over a 5-year period as a consequence of mining activities, resulting in permanent displacement, compaction, and mixing of soils within the proposed site. Approximately 0.8 acre along the access road upgrade would also be disturbed, compacted, and mixed. An undetermined amount of soil erosion, by both wind and water, would continue in the project area until reclamation occurs. Direct impacts to project area soils would be low to moderate and long-term.

4.11.2 Potential Mitigation

The proposed haul road will be upgraded to Gold Book Standards to ensure adequate cross-drainage. The topsoil and overburden will be stockpiled prior to mining. Topsoil and overburden will be removed in 1-acre increments, with no greater than 2-acres of excavated topsoil and overburden stockpiled at any given time. Once an acre has been mined, it will be reclaimed, thus limiting the amount of soils exposed to potential erosion. A SWPPP will be implemented to minimize erosion and subsequent impacts to water quality.

4.12 Watershed/Hydrology

The proposed project is located within the Arroyo Chico watershed unit. There are no perennial water resources, seeps, springs, or wetlands within the proposed permit area or 80-acre parcel. The site is generally level and does not contain any well-defined ephemeral drainages.

4.12.1 Direct and Indirect Impacts

Impacts to hydrology would be low and long-term since surface water in the project area is ephemeral, associated primarily with runoff from storm events, and would generally flow in the same direction as the current hydrologic patterns. Following full reclamation no changes in current drainage patterns would be expected. Impacts to the Arroyo Chico watershed unit would be negligible.

4.12.2 Potential Mitigation

The implementation of BMPs described in the project specific SWPPP will help avoid impacts to project area hydrology during the operation of the mine.

4.13 Vegetation, Forestry

Implementation of the proposed project would result in the disturbance of a maximum of approximately 10 acres of vegetation in the permit area, and approximately 0.8 acre of vegetation along the proposed road upgrade. There are no trees within the proposed project area.

4.13.1 Direct and Indirect Impacts

Up to 10.8 acres of vegetation could be removed over a 5-year period with no more than 2-acres impacted at one time. Following reclamation there would be a change in the density and composition of the vegetation community. Impacts to vegetation are expected to be low and long-term.

4.13.2 Potential Mitigation

The attached Mining and Reclamation Plan will be implemented (Appendix C). Topsoil and overburden will be stockpiled prior to mining activities. No more than 2-acres of excavated topsoil and overburden will be exposed at any given time. A SWPPP will be implemented to minimize erosion of topsoil. Once an area (1-acre) has been fully mined, the overburden will be replaced and covered with topsoil and the area recontoured and revegetated.

4.14 Invasive, Non-native Species

4.14.1 Direct and Indirect Effects

No BLM listed invasive, non-native species of concern were identified in the proposed area of disturbance or the 80-acre parcel. Surface disturbance activities associated with the proposed project create potential for the establishment and spread noxious weeds and invasive, non-native species. Invasive, non-native species can outcompete and displace native vegetation resulting in altered wildlife habitat use.

4.14.2 Mitigation Measures

Proper seeding and monitoring of the disturbed areas will reduce the potential for invasive species to be introduced. Adherence to BLM reclamation measures will minimize impacts from

invasive, non-native species. Continued monitoring for invasive plants and appropriate control/eradication measures will be done in accordance with standard and project-specific BLM stipulations.

4.15 Livestock Grazing

The project area would be located within the Star Lake Community BLM grazing allotment.

4.15.1 Direct and Indirect Impacts

A maximum of approximately 10.8 acres of vegetation and bare ground would be disturbed by the proposed action over the life of the mine. The mine is expected to cause changes in vegetation composition and density for the long-term. Impacts to grazing resources would be low and long-term.

4.15.2 Potential Mitigation

The project area will be recontoured and reclaimed using the BLM/FFO standard seed mix. Reclamation will occur in phases as the mining progresses.

4.16 Special Status Species

Golden eagle, mountain plover and prairie falcon have the potential to occur in the proposed project area. These BLM special management species were not observed during the field surveys in December 2010 and January 2011. Their potential to occur within the project area is based on evaluation of the habitat, the known habitat associations of the species, and the proximity to documented nests and habitat. Golden eagle and prairie falcon have large home ranges and could potentially use the proposed project area for foraging. There is no potential nesting habitat for any special status raptor species within the proposed project area.

Approximately 4 acres within the 10 acre mine permit area are suitable mountain plover habitat. Other portions of the 80-acre parcel evaluated for the proposed action are also suitable for mountain plover. Mountain plover are ground-nesting birds that do not utilize the same nest sites from year to year.

The proposed project area does not provide potential habitat for any other BLM listed special status species.

4.16.1 Direct and Indirect Impacts

Direct impacts to golden eagles and prairie falcons as a result of the proposed project, would include the removal and modification of a maximum of 10.8-acres of potential foraging habitat. The proposed project would not result in any disturbance or modification of potential raptor nesting habitat. Impacts from loss, modification and avoidance of foraging habitat would be low and short to long-term. Raptor species may also be directly impacted during mining operations due to human and vehicular presence, equipment operation, and noise. These increases may cause raptors to avoid the area. Impacts from avoidance would be low and long-term. Indirect impacts may include a change in vegetation species composition and density due to surface

disturbance and reclamation, which could affect the prey base for these raptor species. Indirect impacts would be low and long-term.

Direct impacts to mountain plover as a result of the project would be the short-term loss and long-term modification of approximately 4-acres of potential breeding and nesting habitat. Given the minor amount of habitat modification and the amount of suitable adjacent habitat, the proposed action would not be expected to result in population level impacts to mountain plover. Mountain plovers would avoid the area due to noise, and human and vehicular activity. Impacts would be reduced by the using moving reclamation, and the implementation of other measures.

4.16.2 Potential Mitigation

Adherence to stipulations provided by the BLM will minimize effects to all raptors that may utilize the project and action areas for foraging and mountain plover that could potentially utilize the project area for breeding and nesting. Should any nesting raptors be identified during mining activities, the BLM biologist will be immediately contacted in order to evaluate whether additional resource protection measures are warranted. Surveys for breeding and nesting mountain plover will be conducted should construction or mining begin between April and July. If nesting mountain plover are discovered within the project area during the surveys the starting point of the mining activities will be moved to an area of unsuitable habitat or unoccupied habitat within the 80-acres that is outside of the ¼ mile buffer zone or separated by topography that would aid in minimizing impacts to the nest (personal comm. John Kendall, BLM March 28, 2011).

4.17 Wildlife

Wildlife in the project area includes a variety of mammals, birds, and reptiles found in desert grassland communities. Wildlife or signs of wildlife, observed within and around the project area included desert cottontail, black-tailed jackrabbit, kangaroo rat, and coyote. A complete list of wildlife and wildlife sign observed during the field investigations of the project area is provided in the BSR (Appendix C).

4.17.1 Direct and Indirect Impacts

The proposed action would result in the removal or modification of a maximum of up to 10.8 acres of vegetation, thereby decreasing available habitat for a variety of wildlife species. This habitat loss would affect species distribution and composition in the project area. Since the vegetation removed would not necessarily be replaced with the same species, and/or in the same distribution, an alteration in habitat utilization is anticipated. Some wildlife would be displaced for the duration of mining activities. Based on the amount of habitat impacted and the amount of suitable habitat available in the surrounding area, these impacts would be unlikely to affect any wildlife species at a population level. Some burrowing animals may be killed or their burrows destroyed during operation of the mine. Depending on the excavation depth, some wildlife may become trapped in the pit. During mining activities there would be direct impacts to area wildlife as a result of human and vehicular activity and the associated noise. Traffic levels would increase by four to five truck trips per day. The increase in traffic could result in an increase in wildlife/vehicular collisions; however most wildlife species have the mobility to

avoid strikes and vehicle speeds would be below 45 mph. The impact of the proposed action on wildlife in the project and surrounding area would be low and long-term.

4.17.2 Potential Mitigation

Pit side slopes will be regularly graded to angle of repose or less to prevent slope collapse, or trench stabilizers will be used. Construction activities will be confined to the proposed project area to minimize surface disturbance. Adherence to BLM reclamation and sanitation measures will minimize impacts. The pits will have an entry/exit path designed for the equipment to drive in and out that would also allow wildlife an exit in case accidental entrapment occurs. The employees will check the pits prior to excavation daily to make sure there is no trapped wildlife.

4.18 Migratory Birds

Effects to migratory birds can include disturbance from increased human presence, increased noise levels, temporary and permanent removal of nesting or foraging habitat, or destroying nests or eggs.

4.18.1 Direct and Indirect Affects

Determining effects on birds is not clear-cut since activities that result in the loss of habitat for one species may improve conditions for another. Migratory species that may occur in the project area are listed in Table 7. Scrub habitat provides a source of food, security and escape cover and nesting substrate for migratory bird species. Direct effects would include the short to long-term loss of a total of 10.8 acres of ground and shrub nesting habitat. There would be disturbance to individuals from noise and increased human presence during mining operations, which would likely cause avoidance of the area.

Table 7. Migratory Bird Species of Concern Occurring within the BLM/FFO and Potential Impacts.

Species	Habitat Type	Effects	Impact Rating None/Low/Moderate/ High
Grasshopper sparrow (*Ammodramus savannarum*)	sage/grass	May be positively affected due to conversion to grassland.	Low
Sage sparrow[1] (*Amphispiza belli*)	sage/grass	Minor loss of nesting and brood rearing habitat	Low
Burrowing owl (*Athene cunicularia*)	sage/grass	Little effect, nests in abandoned prairie dog burrows.	Low
Ferruginous hawk (*Buteo regalis*)	sage/grass/ piñon-juniper interface	Loss of nesting and foraging habitat; decrease in prey (small mammals) abundance likely.	None
Mountain plover (*Charadrius montanus*)	sage/grass	May be positively affected due to conversion to grassland; may produce more prey (i.e., arthropods).	Low

Species	Habitat Type	Effects	Impact Rating None/Low/Moderate/ High
Long-billed curlew (*Numenius americanus*)	sage/grass	May be positively affected due to conversion to grassland.	Low
Sage thrasher[1] (*Oreoscoptes montanus*)	sage/grass	May be some loss of sage/nesting habitat	Low
Bendire's thrasher (*Toxostoma bendirei*)	sage/grass	Little effect anticipated some loss of nesting habitat; increase in prey (i.e., arthropods) likely.	Low

1 = "High Priority" bird species that are listed on the NMPIF "Highest Priority" birds of conservation concern list but not on the USFWS "Birds of Conservation Concern 2008" list.

Other effects could include nest abandonment in adjacent areas during mining operations; degradation of habitat from invasive species introduction; and decreased mammal prey base for raptors due to modification of habitat. Long-term effects would include displacement of individuals to adjacent habitats. Due to the size of the proposed disturbance and the amount of suitable habitat in the surrounding area long-term reproductive effects to migratory birds (including raptors) on a population level are not expected.

4.18.2 Potential Mitigation

Construction activities will be confined to the proposed project area to minimize surface disturbance. Adherence to BLM reclamation and sanitation measures will minimize impacts. Following mining activities, disturbed areas will be recontoured and reclaimed. Noxious weed control measures will minimize the potential introduction of weeds into the project area. Any spills will be promptly cleaned up and Menefee Mining Corporation will prepare a hazardous material response contingency plan to cover eventualities that could arise from an accidental release of hazardous materials (Appendix B). Any bird nests found within the proposed project area will be reported to a BLM/FFO biologist for appropriate mitigation prior to initiation of mining activities.

4.19 Visual Resources

The proposed action is located within an area classified as a Class III VRM by the BLM. The project area is located in a broad valley bounded on the north by Sisnathyel Mesa and the south by Chaco Mesa. The valley bottom dissected by a series of dendritic drainages including Papers Wash, Salazar Wash, and Torreon Wash and is punctuated by isolated eroded mesas, buttes, and ridges.

4.19.1 Direct and Indirect Impacts

Direct impacts due to the proposed humate mine include further disturbance of the overall area which would occur 1-acre at a time. Ground disturbance, topsoil and overburden stockpiles, the mine pit, and heavy equipment would have moderate long-term effects (5-years) to visual resources in the area. Once mining operations have ceased and the area fully reclaimed, impacts to visual resources would be low and long-term.

4.19.2 Potential Mitigation

No more than 2-acres of excavated topsoil and overburden will be exposed at any given time. A minimal amount of equipment (one pickup, one trackhoe or front-end loader, and one dump truck) would be onsite during mining operations. Moving reclamation would be implemented as outlined in the Mining and Reclamation Plan in Appendix B. Once an area has been mined, overburden and topsoil would be replaced, the area recontoured, and then reseeded.

4.20 Noise

Construction and mining activities would require the use of heavy equipment. One-front end loader would be in use during daily hours. Dump trucks would make between four to five trips to the site daily. The typical range in noise levels from a front-end loader are between 75-85 dBA, while typical range for trackhoe levels are between 75-95 dBA. Trucks emit noise levels typically ranging between 80-95 dBA (USEPA 1971). Noise levels in the area would increase for the duration of mining and reclamation activities. Noise levels would vary depending on a variety of factors including time of day, wind, temperature, and humidity. Noise levels would dissipate with distance from the source.

4.20.1 Direct and Indirect Impacts

The increase in noise levels would be localized to the mine site and would decrease with increasing distance from the source. Impacts to area noise levels would be low and long-term.

4.20.2 Potential Mitigation

Construction hours will be limited to daytime hours, five days a week. A minimal amount of equipment would be used on site. All equipment would comply with industry and NM Department of Transportation standards.

4.21 Public Health and Safety

4.21.1 Direct and Indirect Impacts

The proposed project may impact project area health and safety in a number of ways. The primary activities associated with public health and safety are transportation to and from the site as well as the operation of heavy equipment and machinery associated with mining activities. A maximum of five dump truck loads would be removed from the site daily. Impacts to public health and safety will be low and short to long-term. The mine would be operational year round resulting in a low increase in vehicular traffic levels within the project area and surrounding region.

4.21.2 Potential Mitigation

Proper operation of equipment and machinery and adherence to approved mining safety practices will minimize potential health and safety risks inherent to surface mining operations. The operation of the proposed mine will comply with all MSHA requirements for mine operations. A locked wire gate at the access road to the parcel will restrict public access to the mine area.

Orange safety fencing will be placed around the open pit in the evenings and during the weekends. In addition, hauling equipment and materials for the project on public roads would comply with all Department of Transportation regulations. Loads will be covered at all times during transport and load limits will stay within the maximum allowable weight for New Mexico and Navajo Department of Transportation. Speed limits will be followed where posted and in areas where speed limits are not posted the haul trucks will stay under 25 miles per hour. Extra care will be taken at the intersection of Highway 550 during crossings. Pit side slopes will be regularly graded to angle of repose or less to prevent slope collapse, or trench stabilizers will be used. Mining operations will be conducted 5-days a week during daylight hours.

4.22 Cumulative Impacts

Council on Environmental Quality NEPA regulations require that cumulative impacts of a proposed project be addressed when the cumulative impacts are expected to be significant [14 CCR 15130 (a), 40 CFR 1508.25 (a) (2)]. Cumulative impacts are impacts on the environment that result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions [14 CCR 15355 (b), 40 CFR 1508.7]. These impacts can result from individually minor, but collectively significant actions taking place over time. Cumulative impacts are presented in terms of how project specific impacts from the proposed action would add to baseline data derived from development activity in this specific area.

The surrounding area, within a five mile radius, contains approximately 73 oil and gas wells and associated roads for access. A few scattered residences also occur within this radius. Residential development is not expected to increase substantially and no other reasonably foreseeable developments are expected in the area. Additional humate and sandstone mines in the area have been and may continue to be developed. Menefee Mining Corporation could over time mine the entire 80-acre parcel in 10 acre increments, resulting in low cumulative impacts to the area. Because the maximum amount of acreage for mine development is limited and monitored annually by the Minerals and Mining Division and BLM, the cumulative impacts the proposed action in conjunction with other mining and development in the area would be low.

The proposed action would cumulatively impact air quality, surface water quality, soils and topography, vegetation, wildlife and wildlife habitat, BLM special management species, and migratory birds. There would also be cumulative effects from increased sound levels, health and safety issues, traffic levels, and visual effects, for the duration of mining. Overall, cumulative impacts as a result of the proposed action are expected to be low and long-term.

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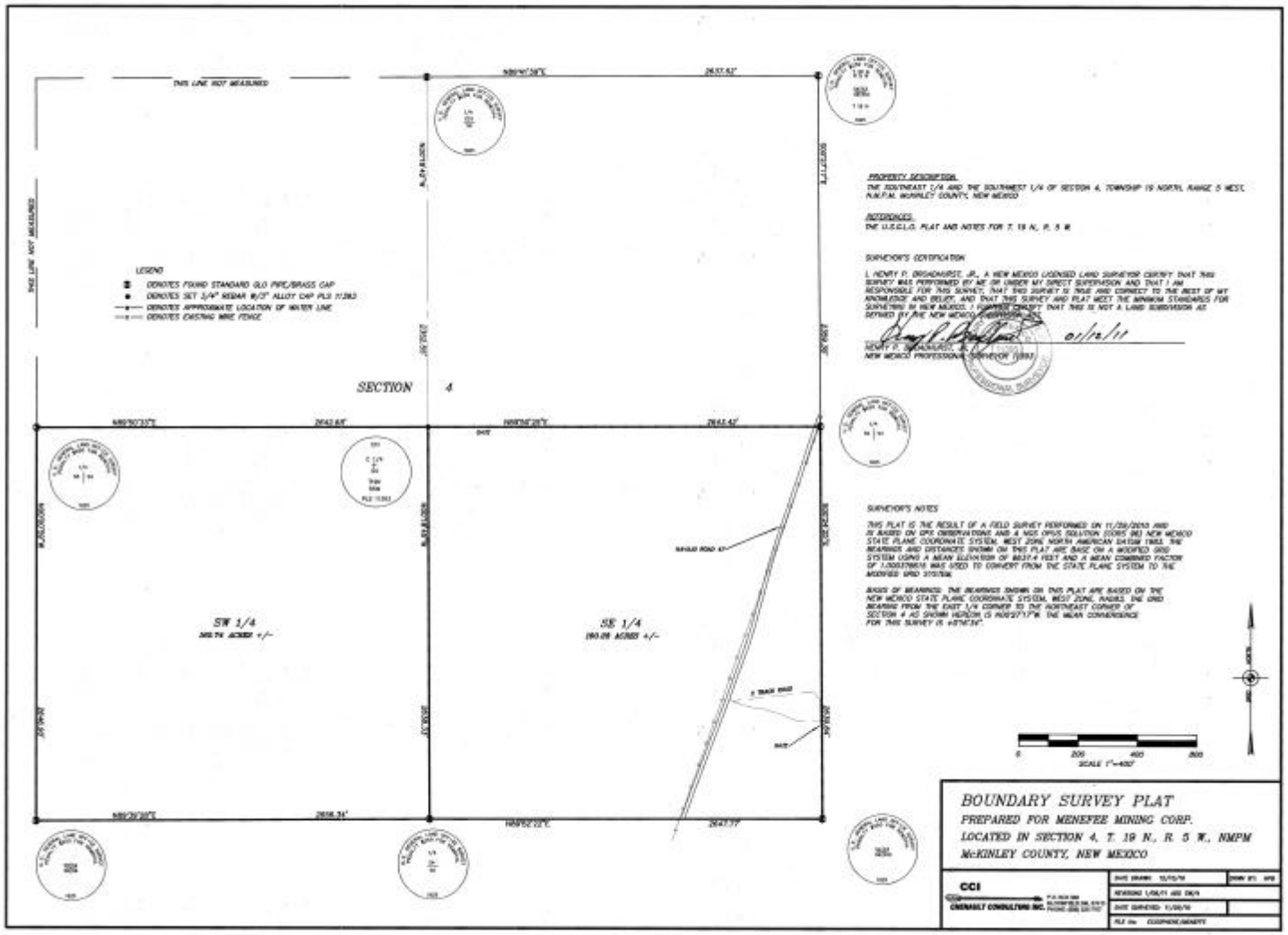
APPENDIX A
PROJECT PLAT AND MAPS



PROPERTY DESCRIPTION:
THE SOUTHEAST 1/4 AND THE SOUTHWEST 1/4 OF SECTION 4, TOWNSHIP 19 NORTH, RANGE 5 WEST, N.M.P.M. MCKINLEY COUNTY, NEW MEXICO

REFERENCES:
THE U.S.G.L.O. PLAT AND NOTES FOR T. 19 N., R. 5 W.

SURVEYOR'S CERTIFICATION

I, HENRY P. BROADHURST, JR., A NEW MEXICO LICENSED LAND SURVEYOR CERTIFY THAT THIS SURVEY WAS PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO. I FURTHER CERTIFY THAT THIS IS NOT A LAND SUBDIVISION AS DEFINED BY THE NEW MEXICO SUBDIVISION ACT.

01/12/11

HENRY P. BROADHURST, JR.
NEW MEXICO PROFESSIONAL SURVEYOR 11383

SURVEYOR'S NOTES

THIS PLAT IS THE RESULT OF A FIELD SURVEY PERFORMED ON 11/28/2010 AND IS BASED ON GPS OBSERVATIONS AND A NGS OPUS SOLUTION (CORS ID) NEW MEXICO STATE PLANE COORDINATE SYSTEM, WEST ZONE NORTH AMERICAN DATUM 1983. THE BEARINGS AND DISTANCES SHOWN ON THIS PLAT ARE BASE ON A MODIFIED GRID SYSTEM USING A MEAN ELEVATION OF 6837.4 FEET AND A MEAN COMBINED FACTOR OF 1.0001788616 WAS USED TO CONVERT FROM THE STATE PLANE SYSTEM TO THE MODIFIED GRID SYSTEM.

BASIS OF BEARINGS: THE BEARINGS SHOWN ON THIS PLAT ARE BASED ON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD83. THE GRID BEARING FROM THE EAST 1/4 CORNER TO THE NORTHEAST CORNER OF SECTION 4 AS SHOWN HEREON IS N00°27'13"W. THE MEAN CONVERGENCE FOR THIS SURVEY IS +0°14'36".

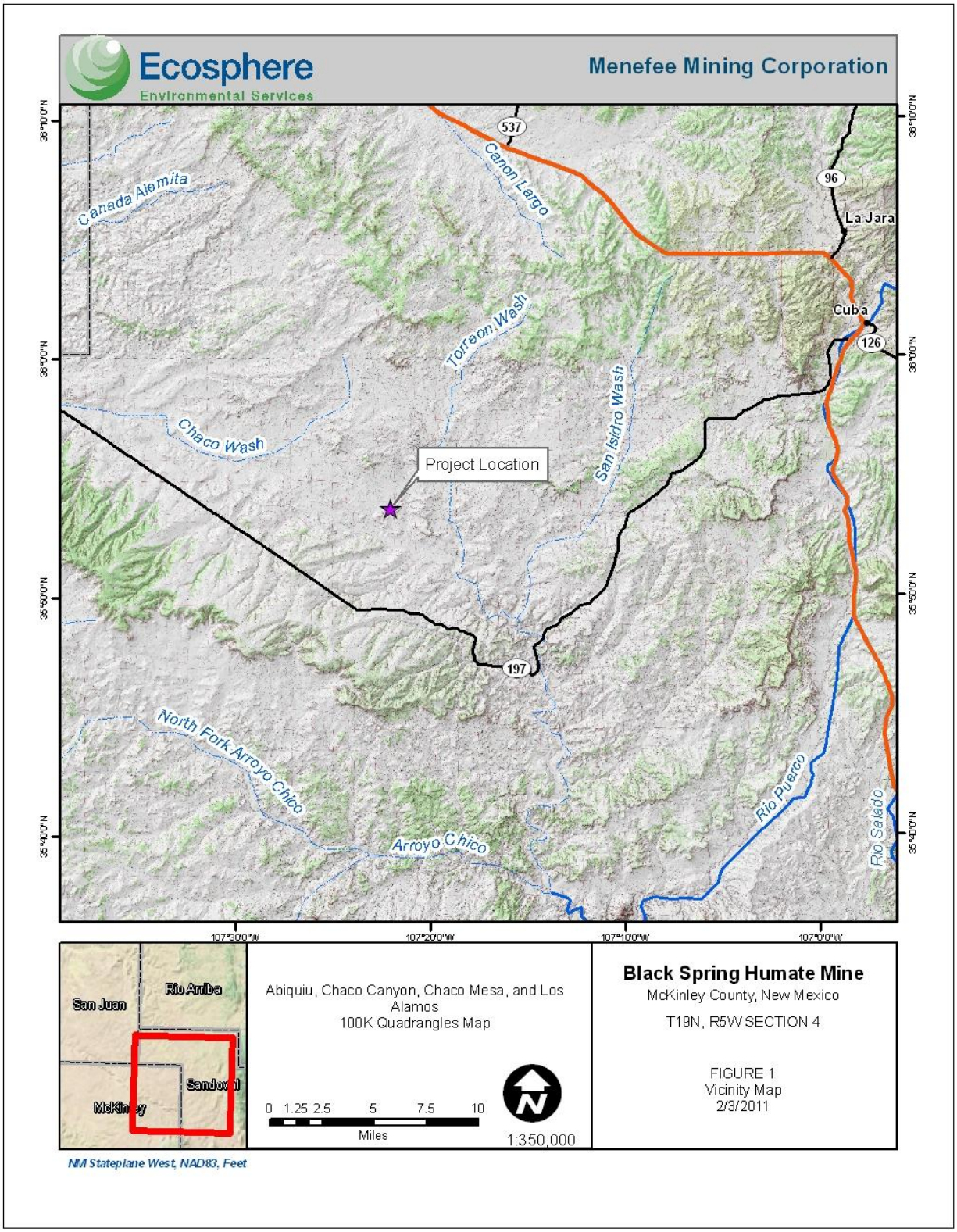
0 200 400 800
SCALE 1"=400'

BOUNDARY SURVEY PLAT

PREPARED FOR MENEFEE MINING CORP.
LOCATED IN SECTION 4, T. 19 N., R. 5 W., NMPM
McKINLEY COUNTY, NEW MEXICO

CCI
CHENAULT CONSULTING INC.

DATE DRAWN: 12/15/10	DRAWN BY: MPB
REVISIONS: 1/06/11 AND 1/10/11	
DATE SURVEYED: 11/30/10	
FILE No: ECO/MINE/BOUNDARY	


Ecosphere
Environmental Services
Menefee Mining Corporation
Canada Alemita
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537
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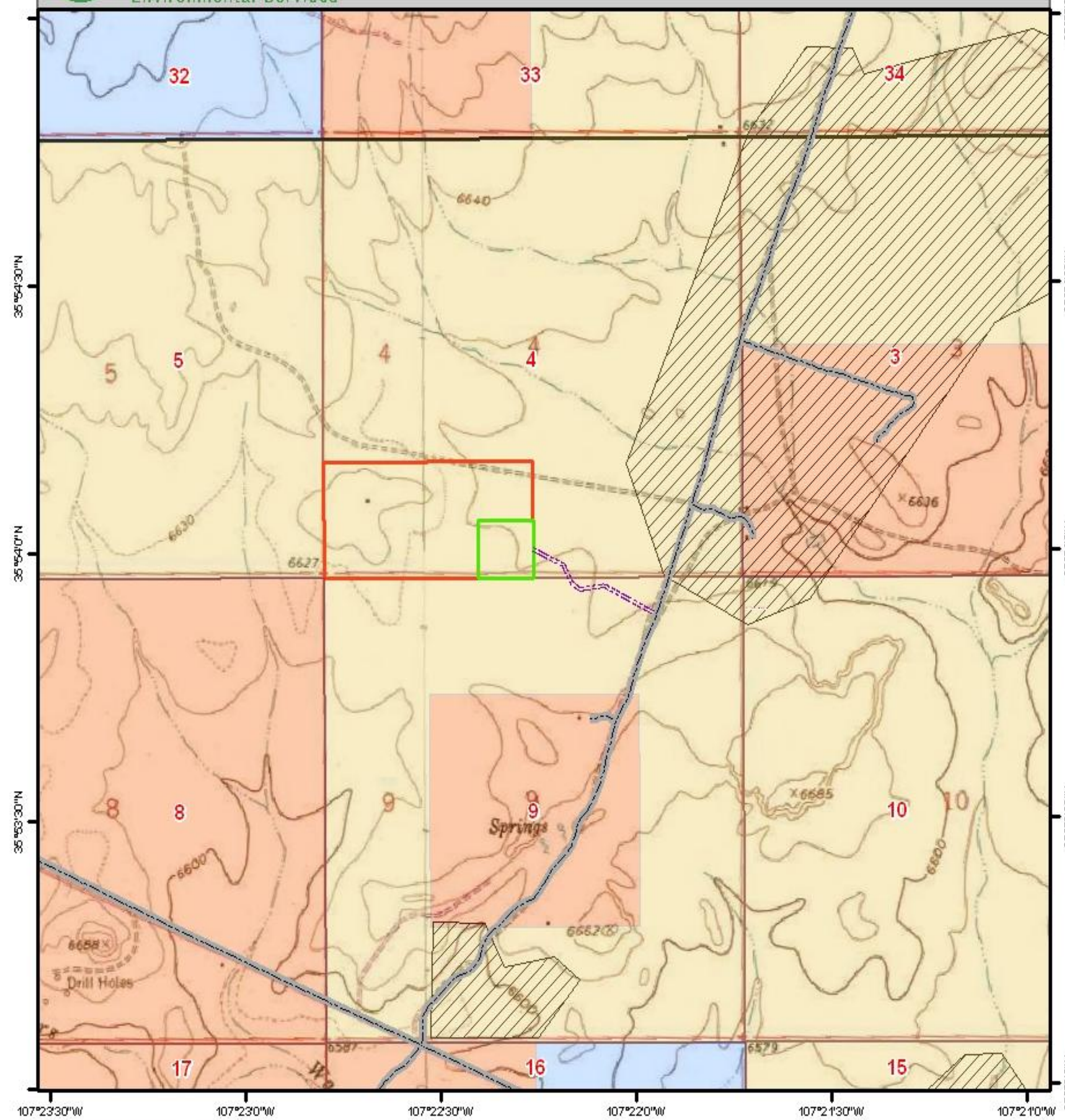
La Jara
Cuba
126
Torreon Wash
San Isidro Wash
Chaco Wash
Project Location
197
North Fork Arroyo Chico
Arroyo Chico
Rio Puerco
Rio Salado
36°10'0"N
36°0'0"N
35°50'0"N
35°40'0"N
107°30'0"W
107°20'0"W
107°10'0"W
107°0'0"W
San Juan
Rio Arriba
Sandoval
McKinley
Abiquiu, Chaco Canyon, Chaco Mesa, and Los Alamos
100K Quadrangles Map
0 1.25 2.5 5 7.5 10
Miles
1:350,000
Black Spring Humate Mine
McKinley County, New Mexico
T19N, R5W SECTION 4
FIGURE 1
Vicinity Map
2/3/2011
NM Stateplane West, NAD83, Feet

Ecosphere Environmental Services

Menefee Mining Corporation



Legend

- Project Area (80- acres)
- Haul Road (1,770 feet)
- 10-acre Permit Area
- BLM Designated Mountain Plover Habitat
- Existing Roads
- BLM
- Tribal
- State

0 370 740 1,480 2,220 2,960

Feet

1:21,021

Black Spring Humate Mine

McKinley County, New Mexico

T19N, R5W SECTION 4

Ojo Encino Mesa and Star Lake, NM 7.5 min Quadrangle

FIGURE 2

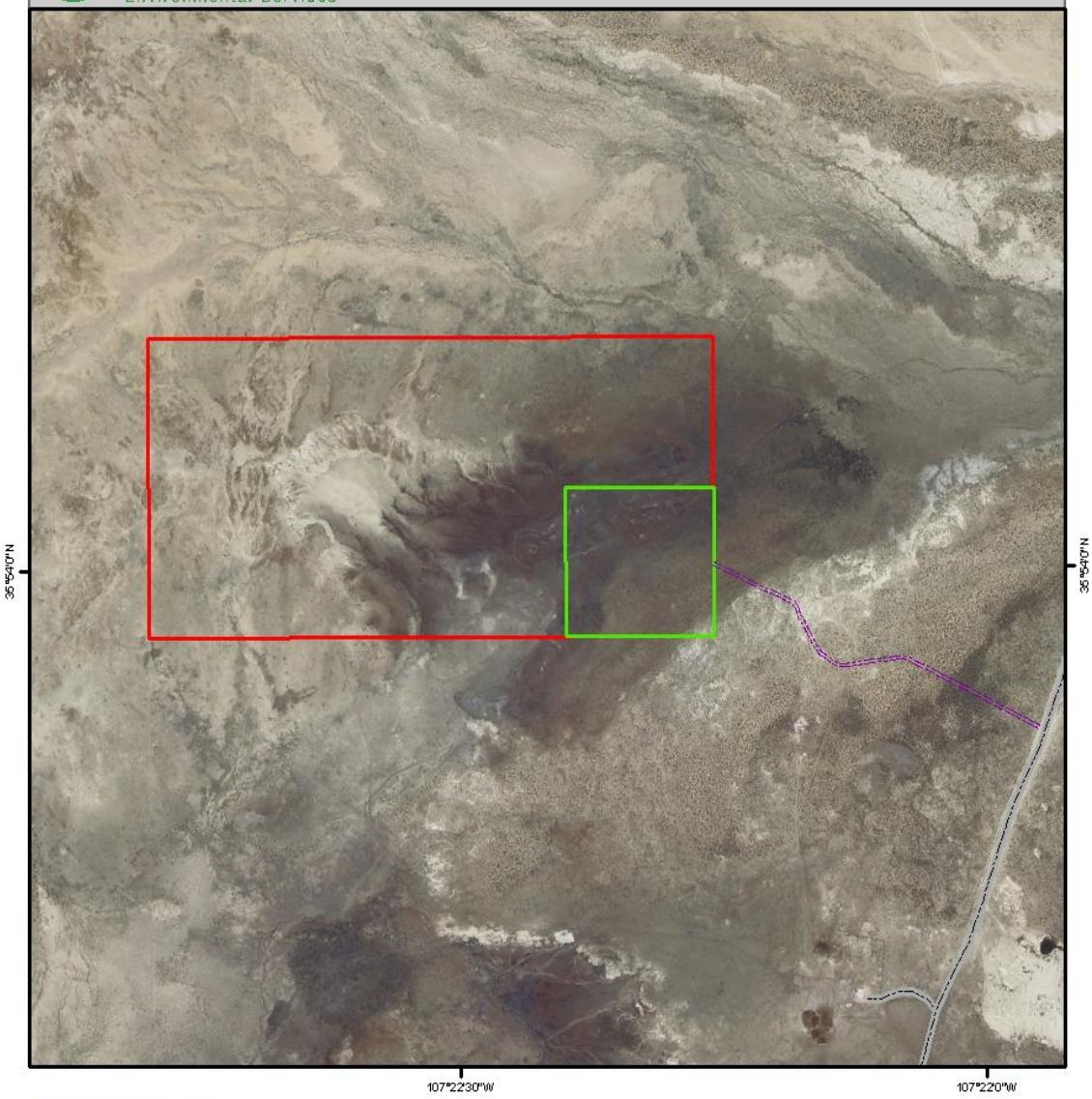
Project Area Map

2/3/2011

NM Stateplane West, NAD83, Feet

Ecosphere
Environmental Services

Menefee Mining Corporation



Legend

- Project Area (80- acres)
- Haul Road (1,770 feet)
- 10-acre Permit Area
- Existing Roads

0 140 280 560 840 1,120
Feet

1:7,982

Black Spring Humate Mine

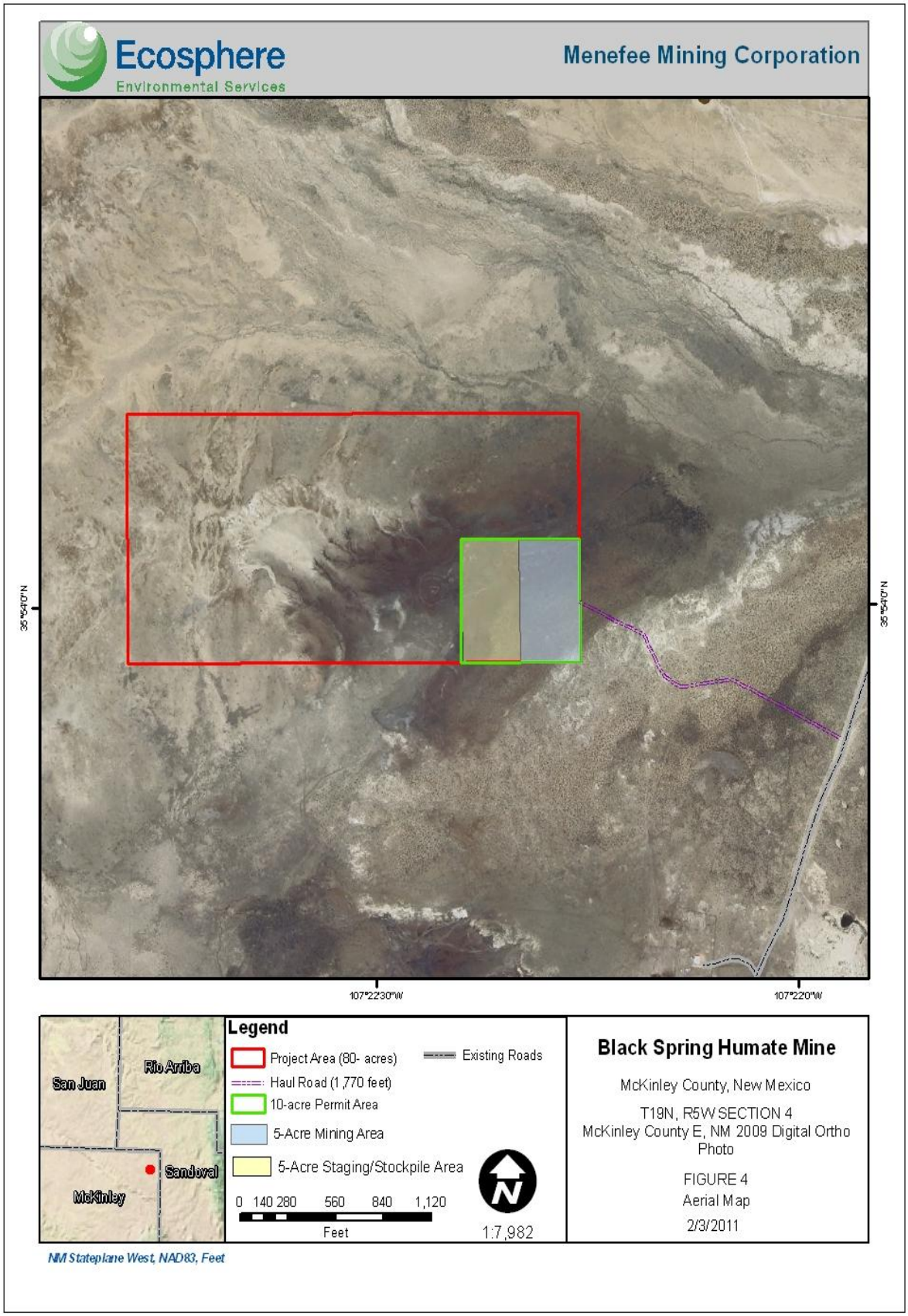
McKinley County, New Mexico

T19N, R5W SECTION 4
McKinley County E, NM 2009 Digital Ortho Photo

FIGURE 3
Aerial Map

2/3/2011

NM Stateplane West, NAD83, Feet


Ecosphere
Environmental Services
Menefee Mining Corporation
36°5'0"N
107°22'30"W
107°22'0"W
San Juan
Rio Arriba
Sandoval
McKinley
Legend
Project Area (80- acres)
Existing Roads
Haul Road (1,770 feet)
10-acre Permit Area
5-Acre Mining Area
5-Acre Staging/Stockpile Area
0 140 280 560 840 1,120
Feet
1:7,982
Black Spring Humate Mine
McKinley County, New Mexico
T19N, R5W SECTION 4
McKinley County E, NM 2009 Digital Ortho Photo
FIGURE 4
Aerial Map
2/3/2011
NM Stateplane West, NAD83, Feet

Ecosphere
Environmental Services

Menefee Mining Corporation

Legend

- Mine Site Location
- Processing Plant Location
- Travel Route
- Highway
- Major Road

1:154,265

Black Spring Humate Mine

McKinley County, New Mexico

Abiquiu, Chaco Canyon, Chaco Mesa, and Los Alamos 100K Quadrangles Map

T19N, R5W SECTION 4
FIGURE 5

Travel Route Map

3/16/2011

NM Stateplane West, NAD83, Feet

APPENDIX B
MINING AND RECLAMATION PLAN

APPENDIX C
BIOLOGICAL SURVEY REPORT

BIOLOGICAL SURVEY REPORT

MENEFEE MINING CORPORATION
PROPOSED BLACK SPRING HUMATE MINE PROJECT

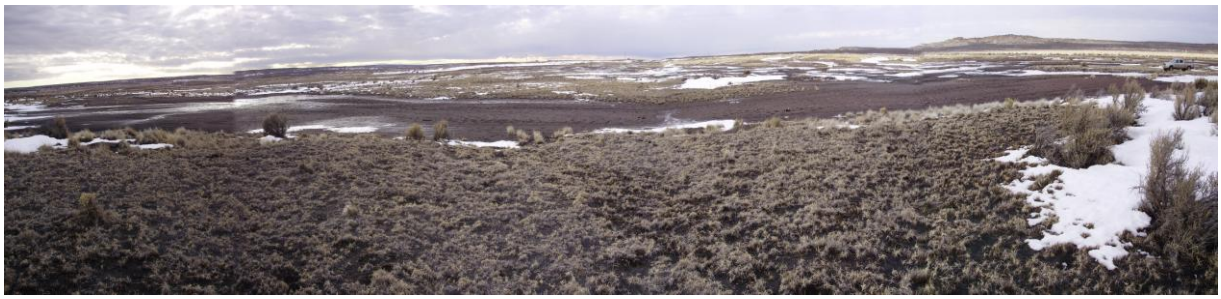


Photo 1. Panoramic view from the southeast corner, extending north to west, right to left.

This report describes the potential for U.S. Fish and Wildlife Service (USFWS) and Bureau of Land Management (BLM) listed threatened, endangered, candidate, and other designated species to occur in the project and action areas. The BLM defines the action area as any area that may be directly or indirectly impacted by the proposed action. This report is prepared in accordance with the BLM's biological survey guidelines and is intended to provide the agency with information to make determinations of effect on species with special conservation status.

PROJECT DESCRIPTION

Menefee Mining Corporation contracted Ecosphere Environmental Services to a conduct biological survey for an 80-acre plot of land with the surface and mineral estate administered by the BLM, Farmington Field Office (FFO). Menefee Mining Corporation is proposing to permit 10 acres within the 80-acre plot for the proposed Black Spring Humate Mine Project with the New Mexico Mining and Minerals Division and enter into a Mineral Materials Sales Contract with the BLM. The mine would be a surface humate mine. The mineral humate is an organic material contained within the Menefee geological formation (Shomaker and Hiss 1974).

Location: The proposed Black Spring Mine would be located approximately 24 miles south east of Cuba, New Mexico (NM). Ojo Encino School and residential area is approximately five miles north of the lease site. Legal coordinates of the proposed project are; the S 1/2 of the SW ¼ of Section 4, Township 19 North, Range 05 West, New Mexico Principal Meridian (NMPM) in McKinley County, NM. A project survey plat is provided as Attachment A.

A project area map showing the location of the proposed action on the Ojo Encino and Star Lake, NM U.S. Geological Survey 7.5-minute topographic maps is provided as Attachment B.

Disturbance: The proposed mine permit area would be 10 acres in size (refer to Figure 1). An approximately 1,770 foot two-track road would be upgraded within a 20-foot wide corridor to access the site. Menefee Mining Corporation would clear approximately 1 acre of topsoil and overburden at a time within the permit area. Moving reclamation would be implemented so that as 1-acre is played out, reclamation would begin on that acre. No more than 2 acres would be disturbed at one time. Approximately zero to three feet of topsoil/overburden would be removed and placed within designated areas. Topsoil would be stockpiled separately from overburden. A front-end loader

would remove the desired humate and a dump truck would haul the material to Menefee Mining Corporation's processing facility in Cuba, NM. A total of 10.8 acres would be disturbed by the proposed project.

Previous Disturbance: The project area would be located approximately 1,600 feet west of Star Lake Road. An existing two-track road, approximately 1,770 feet long, would be improved and utilized to access the site however; a 560-foot section of the two-track would be re-routed approximately 180 feet southwest to avoid natural resource concerns. Approximately 0.8 acre of previous disturbance, associated with the existing two-track would be utilized for the haul road. An existing powerline runs north to south through the west quarter of the project area. The two-track road extends west towards the powerline and then north along the powerline. Evidence of livestock grazing and use was observed throughout the project area and immediate vicinity.

METHODOLOGY

Off-site Methods: Prior to conducting fieldwork, Ecosphere biologists compiled a list of USFWS and BLM species with special conservation status that occur or have the potential to occur in McKinley County, NM. USFWS listed species were obtained from the USFWS Southwest Region Endangered Species List (Table 1) (USFWS 2011). BLM special status species (Table 2) were compiled from the BLM/FFO Instruction Memorandum No. IM-NM 200-2008-01 (BLM 2008) and the Farmington Resource Management Plan (BLM 2003).

On-site Methods: Pedestrian surveys of the 80-acre project area were conducted by Ecosphere on December 7, 2010 and January 19, 2011. The weather was sunny and windy with ambient temperatures around 10-20º F during the surveys. All plant and wildlife species and signs of wildlife observed in the project area were recorded and digital photos of the project area were taken. Snow cover was estimated between 10-15 percent during the January 19, 2011 field survey. Binoculars were used to survey for raptors, potential nesting habitat and whitewash. The habitat was evaluated for all USFWS and BLM species with special conservation status that have the potential to occur in the project area or action area (Tables 1 and 2).

ACTION AREA

Action Area: The action area consists of the proposed project area and surrounding terrain within a 1/3-mile radius of the project area.

Physical Description: The elevation throughout the project area ranges between 6,620 and 6,660 feet. The 80-acre project area is located within mildly rolling terrain with an overall south to southeast slope. The topographical slopes within the area range between 0-6 percent. The west three-quarters of the project area contains the steeper slopes. The action area is relatively flat and gently rolling with slopes between 0-4 percent. There are no major topographical features within the action area.

Surface geology of the proposed project area is derived from the Kirtland and Fruitland formations. Soils in the proposed project area are classified as five major types; Tsosie-Councelor-Blancot, Calladito-Elias association, Councelor-Eslendo-Calladito complex, Starlake clay, and Badland.

There are no perennial streams in the proposed project area. There are no surface water sources,

riparian areas, or wetlands in the project or action area.

Biological Description: The project area is located within two main vegetation communities; Desert grassland and Great Basin Desert Scrub (Dick-Peddie 1993). The Desert grassland; community consists of blue grama (*Bouteloua gracilis*), galleta grass (*Pleuraphis jamesii*) with scattered saltbush (*Atriplex obovata*), with an estimated ground cover of 10-25 percent. The Great Basin Desert Scrub community is dominated by saltbush (*Atriplex obovata* and *Atriplex gardneri*), blue grama, galleta grass, alkali sacaton (*Sporobolus airoides*) and greasewood (*Sarcobatus vermiculatus*), with an estimated 5-15 percent cover. The area located within the sand dunes is Great Basin Desert Scrub; dominated by big sagebrush (*Artemisia tridentata*) with an understory of spiney muhley (*Muhlenbergia pungens*) and Greene's rabbitbrush (*Chrysothamnus greenii*), with an approximate 35-40 percent cover. The majority, 69 acres, of the 80-acre parcel is within Desert grassland community and has been heavily grazed by livestock. Areas of bare ground occur throughout the project area. One large patch of bare ground covered with black gravel, approximately 1,000 by 500 feet, (11.5 acres) is in the southeast portion of the project area. The Great Basin Desert scrub is found in the areas adjacent to and scattered within the black gravel. The proposed road upgrade and southeast corner of the parcel would be located within the Great Basin Desert Scrub along the sand dunes.

According to the BLM/FFO, there are 17 recorded historic or currently active golden eagle (*Aquila chrysaetos*) and prairie falcon (*Falco mexicanus*) raptor nests within 14 miles of the action area (BLM 2009, unpublished data). BLM designated potential habitat for mountain plover (*Charadrius montanus*) is located approximately 500 feet northeast of the beginning of the access road and approximately 1,160 feet east of the project area.

Specially Designated Areas: The project area is not located within any specially designated area.

SURVEY RESULTS

USFWS Threatened and Endangered Species: According to the USFWS, there are seven federally listed threatened, endangered, proposed, or candidate species with potential to occur in McKinley County, New Mexico. Table 1 lists these species, their conservation status, habitat associations, and potential to occur in the project or action area.

Table 1. Species listed by the USFWS under the authority of the Endangered Species Act of 1973 for McKinley County, New Mexico (E = endangered; T =threatened; P = Proposed Threatened; C = candidate).

SPECIES	STATUS	HABITAT ASSOCIATIONS	POTENTIAL TO OCCUR IN THE ACTION AREA
MAMMALS			
Black-footed ferret (*Mustela nigripes*)	E	Open grasslands with prairie dog colonies at least 198 acres in size with ≥8 burrows/acre.	No prairie dog colonies occur in the project or action area.
BIRDS			

SPECIES	STATUS	HABITAT ASSOCIATIONS	POTENTIAL TO OCCUR IN THE ACTION AREA
Southwestern willow flycatcher (*Empidonax traillii extimus*)	E	Breeds in dense, shrubby riparian habitats, usually in close proximity to surface water or saturated soil.	No riparian habitat occurs in the project or action area.
Mexican spotted owl (*Strix occidentalis lucida*)	T	Nests in caves, cliffs, or trees in steep-walled canyons of mixed conifer forests.	No mixed conifer forests occur in the project or action area.
Yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	C	Riparian gallery forests with dense, understory vegetation.	Project and action area contain no riparian habitat.
Mountain plover (*Charadrius montanus)*	P	Breeds in flat, open grasslands. Often associated with prairie dog towns and intensive grazing.	**The project area contains potential habitat.**
FISH			
Zuni bluehead sucker (*Catostomus discobolus yarrowii*)	C	Occurs in shady, cobbled and bedrock streams with frequent runs and pools.	No perennial water resources occur in the project area or action area.
PLANTS			
Zuni fleabane (*Erigeron rhizomatus*)	T	Piñon-juniper woodlands on steep, easily eroded sandstone slopes and clay banks, usually in close association with the Chinle and Baca formations. (7,200-8,300 feet). On the Navajo Nation, known to occur on soil derived from Chinle Formation in Chuska Mountains.	The project area does not contain substrates derived from the Chinle or Baca formations.

Source: USFWS 2011

BLM Special Management Species: Of the 10 species warranted for special management consideration by the BLM/FFO (BLM 2008) three species; golden eagle, mountain plover and prairie falcon have the potential to occur within the project area. Species listed by the BLM/FFO and their potential to occur in the project or action area are summarized in Table 2.

Table 2. BLM/FFO species with special management status and their potential to occur in the project and action area based upon habitat associations.

SPECIES	HABITAT ASSOCIATIONS	POTENTIAL TO OCCUR IN PROJECT OR ACTION AREA[1]
BIRDS		
American peregrine falcon (*Falco peregrinus anatum*)	Rugged terrain with rocky cliffs and canyons (30-1,000+ ft high), adjacent to rivers, lakes, or streams. Urban areas with towers and buildings also inhabited.	Project and action area do not include cliffs or canyons adjacent to permanent water resources.
Bald eagle *(Haliaeetus leucocephalus)*	Nest in forested areas adjacent to large bodies of water.	There are no large bodies of water within proximity of the project or action area.
Burrowing owl	Rarely dig their own burrows and are	No prairie dog colonies or short

SPECIES	HABITAT ASSOCIATIONS	POTENTIAL TO OCCUR IN PROJECT OR ACTION AREA[1]
(Athene cunicularia)	typically associated with prairie dog colonies. Found in dry, open, short-grass, treeless plains. Use areas that include shrubs such as four-wing saltbush and rabbitbrush. Also inhabit human-modified landscapes, such as golf courses and parking lots	grassland occur within the project or action area.
Ferruginous hawk *(Buteo regalis)*	Flat or rolling terrain in grasslands, shrub-steppes, deserts, or badlands. Prefers elevated nest sites (e.g., buttes, utility poles, trees and sometimes, on the ground).	There are no flat or rolling grasslands or badlands within the project or action area.
Golden eagle (*Aquila chrysaetos*)	In the West, mostly open habitats in mountainous, canyon terrain. Nests primarily on cliffs and trees.	**The project and action area contain potential foraging habitat.**
Mountain plover (*Charadrius montanus)*	Breeds in flat, open grasslands. Often associated with prairie dog towns and intensive grazing.	**The project area contains potential nesting habitat. BLM designated potential habitat occurs within the action area.**
Prairie falcon (*Falco mexicanus*)	Arid, open regions of grassland or scrub vegetation with cliff formations that are at least 30 ft high. Breeding cliffs are sometimes in semi-open regions with scattered conifer trees and occasionally dense woodlands.	**The project and action area contain potential foraging habitat.**
Yellow-billed cuckoo (*Coccyzus americanus*)	Breeds in riparian woodlands with dense, understory vegetation.	No riparian habitat exists in the project or action area.
PLANTS		
Aztec gilia (*Aliciella formosa*)	Salt desert scrub communities in soils of the Nacimiento Formation (5,000-6,000 ft).	Geological substrate and soils in the action area are not suitable.
Brack's hardwall cactus (*Sclerocactus cloveriae* ssp. *brackii*)	Sandy clay of the Nacimiento Formation in sparse shadscale scrub (5,000-6,000 ft).	Geological substrate and soils in the action area are not suitable.

[1] Bold indicates the species has potential habitat in the project or action area; Source: BLM 2008

DISCUSSION

The open scrubland throughout the proposed project and action areas is excellent foraging habitat for golden eagles and prairie falcons. There are 17 recorded historic or currently active golden eagle and prairie falcon nests within 14 miles of the action area on public lands (BLM 2009, unpublished data). The proposed project area would be within the hunting and home range territories of golden eagle and prairie falcon nesting pairs. Average hunting territory size for golden eagles was found to be 19-59 square miles in California and 25-35 square miles in Utah (Weidensaul 1996). Average home range sizes for prairie falcons were found to be approximately 141 square miles in northern California and approximately 46 square miles in Wyoming (Haak 1982). Given the distance of known territories and suitable nesting habitat from the proposed location and the possibility of yet undocumented territories, it is possible that these raptor species may forage in the proximity or fly through the proposed action area. There is no potential nesting habitat within the proposed project

or action area due to lack of cliffs or other topographical features.

Direct and indirect impacts to golden eagles and prairie falcons are expected to be low. There would be no trees removed by the proposed project. Direct impacts would include a long-term modification of 10 acres within the 80 acre parcel of potential foraging habitat. Direct impacts would include disturbance to sensitive raptor species that may occur in the project area during hunting forays due to increased noise levels, and human and vehicular activity. These impacts would persist for the duration of mining activities (five years or more). Indirect impacts would be related to a change in vegetation composition and density following reclamation, which could affect the diversity and distribution of prey species in the project area. These impacts would be low and long-term.

Mountain plover prefer large areas of open, 0-2 percent sloping terrain with bare to sparse vegetation (Mikesic and Roth 2008). Multiple nests are scraped throughout the territory into the dirt by the male (Knopf 1996). The duration of the breeding season is from March to August. Distribution of the mountain plover, during breeding season, extends throughout most of Montana, Wyoming, eastern Colorado, to northern New Mexico, and Oklahoma and Texas panhandles (Mikesic and Roth 2008). There has been one documented nest and three sighting locations within six miles of the project area (John Kendall, BLM/FFO, pers. comm., February 3, 2011).

Portions of the 80-acres contain potential mountain plover nesting habitat. The SE ¼ section contains the majority, 11.5-acres, of the potential habitat. Approximately 4 acres of potential habitat is located within the 10-acre mine permit area and would be disturbed by the proposed project. It is unknown if past nesting has occurred within the project area. The field investigations were conducted outside of the breeding/nesting season. Direct impacts to mountain plover as a result of the project would be the short-term loss and long-term modification of approximately 4 acres of potential breeding and nesting habitat. Given the minor amount of habitat modification and the amount of suitable adjacent habitat, the proposed action would not be expected to result in population level impacts to mountain plover. Mountain plovers would avoid the area due to noise, and human and vehicular activity. These impacts would persist for the duration of mining activities (five years or more). Indirect impacts would be related to a change in vegetation composition and density following reclamation, which could affect the diversity and distribution of nesting habitat within the project area. These impacts would be low and long-term. To minimize potential impacts, surveys for mountain plover will be conducted should construction or mining begin between April and July. If nesting mountain plover are discovered within the project area during the surveys the starting point of the mining activities will be moved to an area of unsuitable habitat or unoccupied habitat within the 80-acres that is outside of the ¼ mile buffer zone or separated by topography that would aid in minimizing impacts to the nest (personal comm. John Kendall, BLM March 28, 2011).

Vegetation removal would result in loss of habitat for a variety of ground and shrub-nesting birds protected under the Migratory Bird Treaty Act (MBTA). Direct impacts to these species are expected to be greater if construction occurs during the breeding season from April to August when nest destruction is possible. No nests were identified within the proposed lease area during the January surveys. Noise and human disturbance may cause some nest abandonment in adjacent areas during operations. No nests were identified in the proposed project area during the biological surveys. Horned Larks (*Eremophila alpestris*) were observed during the field surveys.

CERTIFICATION

Conclusions are based on actual field examination and are correct to the best of my knowledge.

Signature of Field Biologist: Theresa Ancell **Date:** 2/3/2011

Theresa Ancell, Biologist
Ecosphere Environmental Services
4801 N. Butler Avenue, Suite 15101
Farmington, NM 87401
(505) 327-3088

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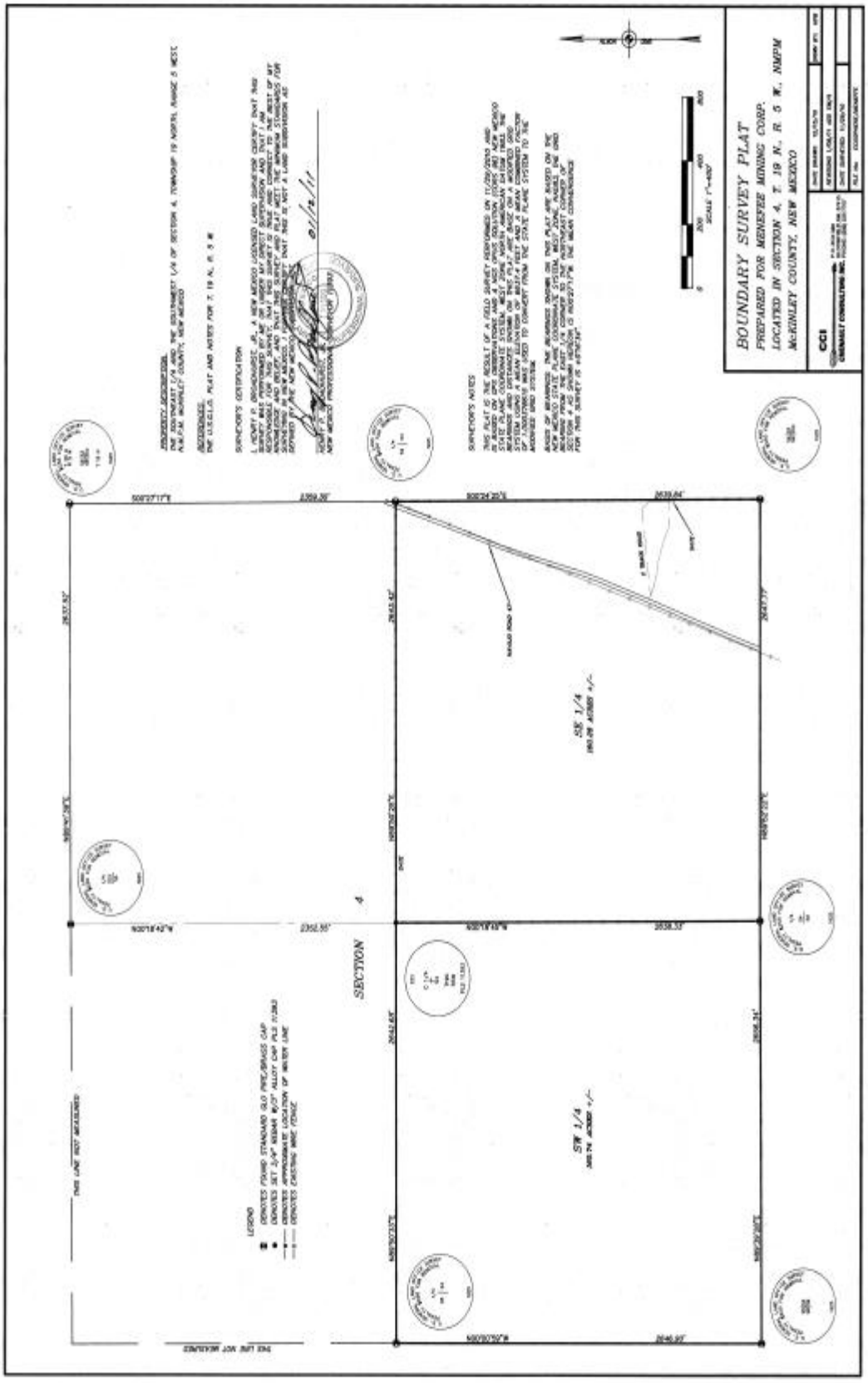
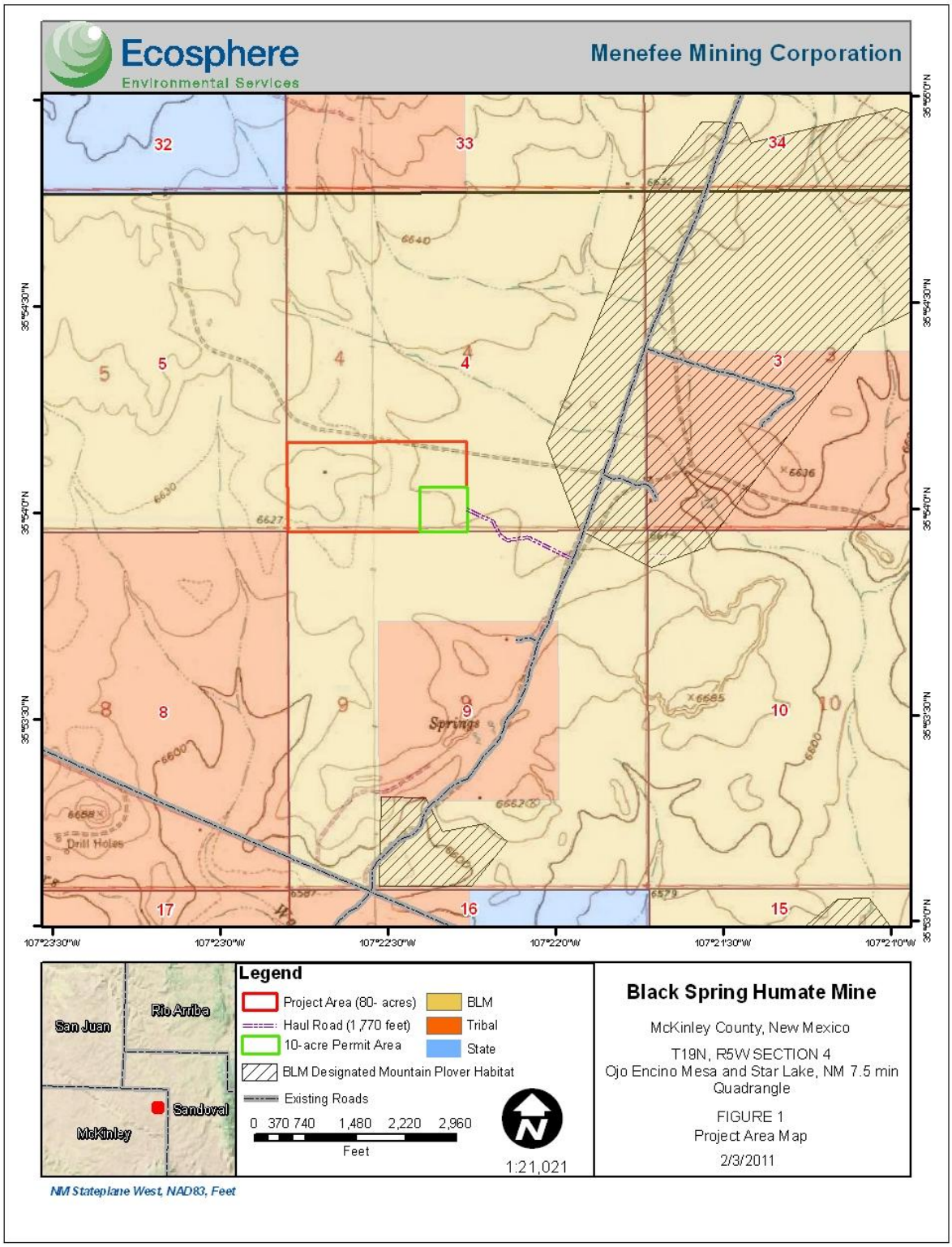
ATTACHMENT A. PROJECT PLAT



ATTACHMENT B. PROJECT AREA MAP



ATTACHMENT C. FLORA AND FAUNA FOUND IN THE PROJECT AREA

Forbs

Salsola tragus	tumbleweed
Senecio multilobatus	groundsel
Halogeton glomeratus	saltlover
Helianthus annuus	sunflower
Ambrosia acanthicarpa	bur ragweed
Halogeton glomeratus	saltlover
Xanthium strumarium	cocklebur

Grasses

Bouteloua gracilis	blue grama
Bromus tectorum	cheatgrass
Pleuraphis jamesii	galleta grass
Sporobolus airoides	alkali sacaton
Achnatherum hymenoides	Indian ricegrass
Muhlenbergia pungens	spiney or sandhill muhley
Aristida purpurea	red three-awn

Shrubs

Artemisia tridentata	big sagebrush
Atriplex canescens	four winged saltbush
Ericameria nauseosa	rubber rabbitbrush
Gutierrezia sarothrae	broom snakeweed
Chrysothamnus greenii	Greene's rabbitbrush
Atriplex obovata	saltbush sp.
Atriplex gardneri	saltbush sp.
Sarcobatus vermiculatus	greasewood

Trees

None

Cacti/Yucca

Opuntia polyacantha	prickly pear cactus

Fauna

Corvus corax	common raven
Equus sp.	horse
Bovinae sp.	cattle
Eremophila alpestris	horned lark
Lepus californicus	jackrabbit
Dipodomys sp.	kangaroo rat
Eutamias minimus	chipmunk

APPENDIX D
PALEONTOLOGICAL REPORT

Report of Survey Findings
Menefee Mining Corporation
Humate Mine
Section 4, Township 19 North, Range 5 West
McKinley County, New Mexico

For Bureau of Land
Management-Farmington Field Office (BLM/FFO)

Prepared by:
John Burris, Ph.D. and Kenneth Heil
BLM-Permitted Consulting Paleontologists
Ecosphere Environmental Services
4801 North Butler Ave.
Farmington, NM 87401

December 13, 2010

Introduction
Menefee Mining Corporation is proposing construction of a new surface mine for the extraction of humates. This project consists of ½ mile by ¼ mile of disturbance for the mine on lands with mineral rights administered by the Bureau of Land Management Farmington Field Office (BLM/FFO). The location has potential paleontological significance, and therefore surveying for paleontology was required. Rock units at the study site belong to the late Cretaceous Fruitland Formation that have produced important vertebrate fossils, including dinosaurs (Lucas et al., 2000).

Location
The well location is approximately 4 miles south-southwest of Ojo Encino, NM. The study area is on land with mineral rights administered by the BLM/FFO. A paleontological survey was required by the BLM/FFO on land under their jurisdiction consisting of one day of field work on November 13, 2010.

Location of Proposed Humate Mine:
W ½, SE ¼, Section 4, T19N, R5W
Elevation 6639 feet
Ojo Encino Mesa and Star Lake USGS 7.5 minute quadrangle

Geology
The entire area of the proposed mine is covered with a few inches to a few feet of recent soils and sagebrush (**Figure 1**). Some thinly-bedded sandstone outcrop is exposed at the surface (**Figure 2**). Petrified wood is found as float in localized areas, sometimes abundantly (**Figure 3**), though no *in-situ* wood was observed. Occasional rounded gravel is also found in localized areas (**Figure 4**), possibly left behind as a lag deposit as a result of Quaternary river sedimentation. In most of the proposed locality the coal layer of interest is just below the soil layer (**Figure 5**).

Menefee Mining Corporation will remove approximately 6 inches to a few feet of overburden to reach the low grade coal and carbonaceous shale for extraction of humates. An existing humate mine is located within ½ mile from the proposed mine, and a cross-section of the strata is exposed down to the coal bed, allowing for a detailed look at the overburden (**Figure 6**). Spoils piles from the existing mine are present at this location, allowing for additional study of the overburden (**Figure 7**). The beds are essentially horizontal, so the overburden stratigraphy will mirror that of the existing mine. The top layer of rock, immediately below the soil is a thinly-bedded, fine-grained quartz sandstone with weak cross-bedding, and is heavily cemented with quartz (**Figure 8**). Lithic fragments make up less than 5% of the clasts. Below are interbeds of fine-grained, friable quartz sandstone with iron oxide and hydroxide stains and more strongly cemented quartz sandstone (**see Figure 8**). These sandstones are consistent with a nearshore, shallow marine and beach environment, though no ichnofossils nor invertebrates were found to support this hypothesis. The rock unit to be mined is formed of interbeds of low-grade sub-bituminous and carbonaceous shale (**Figure 9**).

Paleontological Monitoring Methodology
On the date listed above John Burris, Paleontologist for Ecosphere Environmental Services prospected the area of proposed mine, the nearby mine cut, and spoils piles from the existing mine. Dozens of anthills are located in the proposed project area, and were examined for microfossils.

A GPS unit and digital camera were used to record the survey.

Paleontological Survey Results – Negative Report
The paleontological survey yielded a negative report. No vertebrate fossils were discovered along any section of the area proposed to be disturbed, nor in the area that has been previously disturbed. The only fossils were petrified wood. Because a few inches to a few feet of overburden will be removed with this project, monitoring during disturbance would normally be recommended. However, because the nearby exposed mine and spoils piles yielded no fossils, nor any hint of vertebrates, it is unlikely the adjacent area with its stratigraphic equivalents would have any fossils either, and monitoring is not necessary.

References Cited:
Lucas, S. G., Heckert, A. B., and Sullivan, R. M., 2000, Cretaceous Dinosaurs in New Mexico. New Mexico Museum of Natural History and Science, Bulletin 17, p. 83-90.

Figures

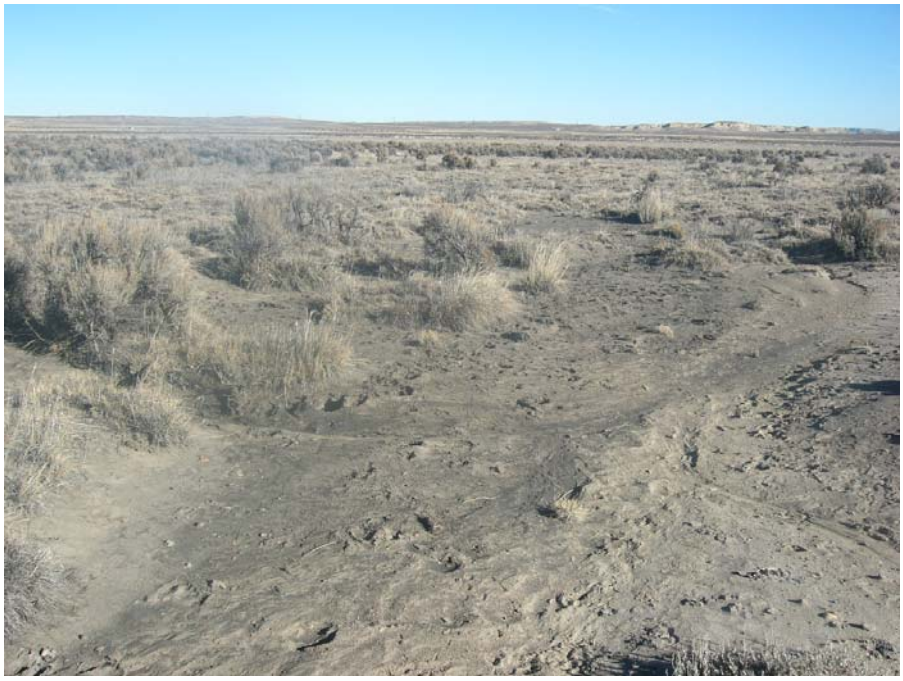


Figure 1 – Overview of proposed humate mine, showing lack of outcrop at surface, area covered by sagebrush. View is to the north.

Figure 2 – Thinly-bedded quartz-sandstone exposed within study area.

Figure 3 – Fragments of petrified wood found as float within the study area.
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Figure 4 – Rounded gravel float found within the study area.

Figure 5 – Approximately two inches of dark soil scraped away to reveal coal layer exposed below.

Figure 6 – Cross section of overburden and coal exposed in nearby mine.

Figure 7 – Spoils piles from an existing mine, located in the vicinity of the proposed mine.

Figure 8 – Thinly-bedded, weakly cross-bedded quartz-sandstone covering coal layer, exposed in nearby mine.

Figure 9 – Strata of interest for the mine, carbonaceous shale and sub-bituminous coal exposed in nearby mine.

ADDENDUM # 1
Plant List
Earthgreen Products Humate Mine
11 December 2010

Asteraceae Sunflower Family
Artemisia tridentata Nutt. Big sagebrush
Chaetopappa ericoides (Torrey) A. Nelson Heath aster
Chrysothamnus greenei (Gray) Greene Greene rabbitbrush
Ericameria nauseosa (Pallas ex Pursh) Nesom & Baird Rubber rabbitbrush
Gutierrezia sarothrae (Pursh) Britton & Rusby Broom snakewood
Machaeranthera grindelioides (Nutt.) Shinn. Gumweed aster

Cactaceae Cactus Family
Opuntia polyacantha Haw. Starvation prickly pear

Chenopodiaceae Goose-foot Family
Atriplex canescens (Pursh) Nuttall Four-wing saltbush
Atriplex gardneri (Moq.-tandon) D. Dietrich var. *cuneata* (A. Nelson) Welsh
Salsola tragus L. Russian thistle

Loasaceae Stickleaf Family
Mentzelia albicaulis Douglas ex Hooker White-stem blazingstar

Poaceae Grass Family
Achnatherum hymenoides (Roemer & J.A. Schultes) Barkworth Indian ricegrass
Aristida purpurea Nutt. Red three-awn
Bouteloua gracilis (Willd. ex Kunth) Lag. ex Griffiths Blue grama
Bromus tectorum L. Cheatgrass
Muhlenbergia pungens Thurber ex Gray Sandhill muhly
Pleuraphis jamesii Torr. Galleta grass
Schismus sp. Mediterranean-grass
Sporobolus airoides (Torrey) Torrey Alkali sacaton

Solanaceae Nightshade Family
Lycium pallidum Miers Pale wolfberry