Ecosphere
Environmental Services

Black Spring Humate Mining and Reclamation Plan

Prepared for:

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Durango, CO
Cortez, CO
Pagosa Springs, CO
Farmington, NM

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ACRONYM LIST

ARMS	Archeological Records Management Section
BLM	Bureau of Land Management
dBA	Decibels Adjusted
DOT	Department of Transportation
Leq	Equivalent Sound Level
MMC	Menefee Mining Corporation
MMD	Mining and Minerals Division
NAAQS	National Ambient Air Quality Standard
NHD	National Hydrography Dataset
NMCRIS	New Mexico Cultural Resource Information System
NMPM	New Mexico Principal Meridian
NRHP	National Register of Historic Places
PRMP	Preliminary Resource Management Plan
TCP	Traditional Cultural Property
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey

1. MINING PLAN

1.1 Project Description

Menefee Mining Corporation (MMC) contracted Ecosphere Environmental Services to prepare a mining and reclamation plan for an initial 10-acre plot of land (the Permit Area) within an 80-acre overall Project Area (the Project Area). The Bureau of Land Management/Farmington Field Office (BLM/FFO) administers the surface and mineral estate. MMC is proposing to permit the initial 10-acre Permit Area for the proposed Black Spring Humate Mine Project with the New Mexico Mining and Minerals Division (MMD), and enter into a Mineral Materials Sales Contract with the BLM. Refer to **Figures 1 and 2** in **Appendix A**.

This mining and reclamation plan was prepared in accordance with the BLM/FFO's draft *Office Management Plan* for processing mineral materials sales contracts (Scott and Hoefeler, undated), and revised per comments from the BLM provided in March 2011 (Mankiewicz 2011).

The mine would be a surface humate mine. Humate is an organic material rich with humic acids, occurring as a deposit within carbonaceous shale or claystone. It is used for various purposes—most notably as a soil amendment. Humate in the region of the project is typically contained within the Menefee geological formation (Shomaker and Hiss 1974).

The intent of MMC is to mine the entire 80-acre Project Area in successively-permitted 10-acre areas. This mining and reclamation plan specifically covers only the initial 10-acre Permit Area (**Figures 3 to 5**). However, since future mining areas will affect—and be affected by—the initial Permit Area, the nature, and extent of the entire 80-acre Project Area was taken into account during development of this plan and will be continuously referenced throughout the plan.

The MMD Minimal Impact New Mining Operation permit covers a maximum of 10 acres. Updates to this mining and reclamation plan may be required by MMD and the BLM should MMC wish to mine additional acreage within the overall 80-acre Project Area beyond the initial 10-acre Permit Area. Given a 5-foot thick humate seam across the Permit Area and 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) (Lown 2011). The BLM/FFO Sales Contract is for 10,000 tons (equivalent to approximately 11,111 cy of humate), and at the stated mining rate new BLM contracts will be required annually. The mine permit would be for five years, therefore at the end of that period MMC would be required to apply for another permit to mine the remainder of the reserves within the 10-acre Permit Area.

1.2 Location

The proposed Black Spring Mine is located approximately 24 miles southwest of Cuba, New Mexico. Ojo Encino School and residential area is approximately 5 miles north of the lease site. The 80-acre Project Area encompasses the S ½ of the SW ¼ of Section 4, Township 19 North, Range 05 West, New Mexico

Principal Meridian (NMPM) in McKinley County, New Mexico. The 10-acre Permit Area is located in the SE ¼ of the SE ¼ of the SW ¼ of the same Section 4. A project survey plat is provided as **Figure 2** of **Appendix A**.

1.3 Permittee

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1.4 Existing Environment:

1.4.1 Regional and Local Topography

The 80-acre Project Area is located in a broad valley bounded on the north by Sisnathyel Mesa and the south by Chaco Mesa. The valley bottom is dissected by a series of named dendritic drainages, including Papers Wash, Salazar Wash, and Torreon Wash and numerous unnamed drainages, and is punctuated by isolated eroded mesas, buttes, and ridges. Ojo Encino Mesa lies 2.5 miles northeast of the Project Area, Little Blue Mesa is 1.8 miles southeast, and the Continental Divide is 3 miles to the west.

The elevation throughout the 80-acre Project Area ranges between 6,615 and 6,640 feet. The overall topography across the Project Area and the immediate vicinity is gently rolling with mild slopes between 0 and 5 percent. The majority of the 80-acre Project Area slopes gently toward the east/northeast. The slope at the south-central boundary is nearly flat. The high point of the Project Area is a small rise centralized at the west end of the Project Area with maximum side slopes of 4 to 5 percent. Aside from the small rise, there are no major topographical features, including outcrops, within the Project Area.

The 10-acre Permit Area is located at an elevation of 6,620 feet. Slopes within the 10-acre Permit Area are 1 percent or less. The southeast corner is the slight high point, and the majority of the Permit Area slopes very gradually to the northeast.

1.4.2 Climate

The climate within the general area averages maximum year round temperatures between 40-85 degrees Fahrenheit (°F) and minimum temperatures between 9.1-50.2ºF (www.worldclimate.com). Average annual rainfall in the general vicinity is 12.8 inches per year, with the highest percentage in July and August (2.1-2.5 inches).

1.4.3 Lease Area Description and Maps

The proposed 10-acre Permit Area is located on the U.S. Geological Survey (USGS) 7.5-minute quadrangles for Ojo Encino Mesa and Star Lake, New Mexico. **Appendix A** includes locator maps for the proposed Permit Area.

1.4.4 Major Right-of-Ways

Within the 80-acre Project Area, one power line right-of-way runs concurrent with the existing north-south power line located near the west boundary of the Project Area. The proposed haul road to the Permit Area leads northwesterly from Star Lake Road, an existing local road. An existing buried water line parallels Star Lake Road within the western right-of-way of the road (see **Figure 2**). This project is not expected to impact nor interfere with this buried water line.

There are no major right-of-ways within the 10-acre Permit Area.

1.4.5 Current Land Use

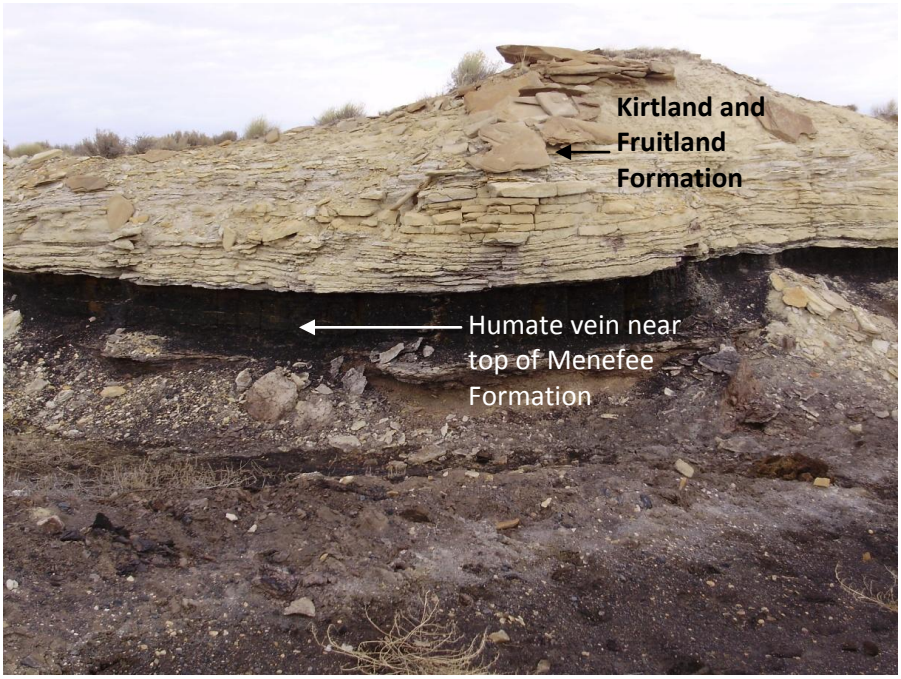
The only land uses within the Project Area are grazing and wildlife use. The 10-acre Permit Area is located within the Star Lake Community grazing allotment (BLM 2008) and is used for livestock grazing. An existing unimproved two-track road provides access to the Permit Area.

1.4.6 Deposit Geology

The desired geological formation containing the humate source is derived from the Menefee Formation of the Upper Cretaceous period (Shomaker and Hiss 1974). The humate within this section is of high-grade and produces a high-quality product (Lown 2011). There are no known potentially hazardous materials that could be exposed during the extraction of the humate material.

1.4.7 Geological Cross-Section

Photograph 1. Geological Cross-Section



No outcroppings occur within the 80-acre Project Area. The geological cross section in the photograph above is located 3,000 feet (0.57 mile) southeast of the Project Area, within the same formation that occurs in the Project Area (see **Figure 3** for location). The orientation of the photograph is northeast. In the photograph, the thickness of the humate portion of the Menefee Formation is approximately 2 feet and the Kirtland and Fruitland Formation overburden is approximately 2-5 feet thick. At the Black Spring Humate Mine site, site conditions expected are 1-3 feet of sand overburden derived from Kirtland and Fruitland parent material atop a 5-foot thick vein of humate (Lown 2011).

1.4.8 Watershed, Surface, and Ground Water

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 2003). Surface and ground water pathways are generally to the south/southeast (BLM 2003).

The Continental Divide runs 3.5 miles northwest of the Permit Area (**Figure 1**). There are no major rivers or washes upstream of the Permit Area that would increase the impact from an un-foreseen 50-year flood event. The Permit Area contains no perennial water sources, wetlands, or springs. The nearest documented spring in the area is identified on the topographic map, and lies 0.5 miles south of the Permit Area. The nearest USGS National Hydrography Dataset (NHD) defined drainage is an unnamed intermittent drainage approximately 1,480 feet northeast of the Permit Area. This unnamed drainage flows easterly and feeds into Torreon Wash, located 3.3 miles east of the Permit Area. Torreon Wash travels southerly for approximately 7.5 miles where it merges with another ephemeral wash, San Isidro

Wash. San Isidro Wash travels approximately 17 miles where it converges with the intermittent Rio Puerco.

Twenty-two known water wells are located in a 5-mile radius of the proposed 80-Acre Project Area. The closest water well, the Encino Well, is located approximately 0.5 mile northwest of the 80-Acre Project Area and has a documented water level of 39.24 feet (NMOSE 2011).

1.4.9 Flora and Fauna

The vegetation within the 80-acre Project Area and the surrounding area is limited and does not fall within any documented fire hazard zones.

The Project Area is located within two main vegetation communities: Desert Grassland and Great Basin Desert Scrub (Dick-Peddie 1993). The majority (69 acres) of the 80-acre Project Area is within Desert Grassland community and has been heavily grazed by livestock. The Desert Grassland community on-site consists of blue grama (*Bouteloua gracilis*), galleta grass (*Pleuraphis jamesii*), and scattered saltbush (*Atriplex obovata*), with an estimated ground cover of 10-25 percent.

The remainder of the Project Area is considered part of the Great Basin desert scrub community, dominated by saltbush (*Atriplex spp.*), blue grama, galleta grass, and alkali sacaton (*Sporobolus airoides*)—with an estimated 5-15 percent cover. An area of sand dunes is located in the extreme southeast corner of the Project Area and within the 10-acre Permit Area, and extends to the south and east. Here the Great Basin desert scrub community is dominated by big sagebrush (*Artemisia tridentata*) with an understory of sandhill muhly (*Muhlenbergia pungens*) and Greene's rabbitbrush (*Chrysothamnus greenei*) with an approximate 35-40 percent cover. The proposed haul road is also located within the Great Basin desert scrub community, crossing the sand dunes between Star Lake Road and the Permit Area.

Areas of bare ground occur throughout the 80-Acre 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 community is found in the areas adjacent to and scattered within this black gravel.

Desert grassland and Great Basin desert scrub communities support a variety of wildlife, including mammals, birds, and reptiles. Mammal species commonly occurring 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 80-Acre Project Area include collared lizard (*Crotaphytus collaris*), short-horned lizard (*Phrynosoma douglasii*), sagebrush lizard (*Sceloporus graciosus*), prairie lizard (*Sceloporus undulatus*), plateau striped whiptail (*Cnemidophorus velox*), bullsnake (*Pituophis melanoleucus*), and western rattlesnake (*Crotalis viridis*).

The Project Area is not located within any federally defined specially designated area such as a Wilderness Area, Wilderness Study Area or an Area of Critical Environmental Concern. Of the 10 species warranted for special management consideration by the BLM/FFO (BLM 2008), only three species have the potential to occur within the Project Area: golden eagle (*Aquila chrysaetos*), prairie falcon (*Falco mexicanus*), and mountain plover (*Charadrius montanus*).

According to the BLM/FFO, there are 17 recorded historic or currently active golden eagle and prairie falcon raptor nests within 14 miles of the Project Area on public lands (BLM 2009, unpublished data). The Project Area contains potential foraging habitat for golden eagle and prairie falcon, but no potential nesting habitat.

Mountain plover has been proposed for listing under the Endangered Species Act of 1973. Portions of the 80-acre Project Area contain potential mountain plover nesting habitat, including approximately 4 acres within the 10-acre Permit Area (Ecosphere 2011a). This potential nesting habitat would be disturbed by the proposed mining activities. It is unknown if past nesting has occurred within the Permit Area as field investigations for this project were conducted outside of the breeding/nesting season (Ecosphere 2011a). Impacts to mountain plover from the proposed mining activity are not expected to result in population level impacts to the species. The species is expected to avoid the mining activity area due to noise, human, and vehicular activity. However, to minimize potential impacts, surveys for mountain plover will be conducted should construction and/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 (Ecosphere 2011*b*).

1.4.10 Historical, Archaeological, Cultural, and Paleontological Sites

Woods Canyon Archaeological Consultants, Inc. (Woods Canyon) inventoried the proposed 80-acre Project Area as well as a 30-foot wide road survey along the proposed haul road (together identified as the "Survey Area" within this subsection only) for archaeological and historic resources in January 2011 under BLM permit #49-2920-08-S and New Mexico Cultural Resource Information System (NMCRIS) permit #119716 (Ecosphere 2010). The inventory included an on-site field survey, literature search, agency consultation, and tribal consultation. Four literature searches were conducted: (1) an online literature search of Archeological Records Management Section (ARMS), (2) a review of site atlases in the BLM Farmington Field Office, (3) a search of the National Register of Historic Places (NRHP) and (4) a search of the State Register of Cultural Properties. The literature search yielded four previously recorded cultural sites recorded within one-quarter mile of the Survey Area; one previously recorded site [LA34767] was located within the Survey Area.

Class III surveys recorded within the Survey Area one existing cultural resource site [LA34767] determined eligible for NRHP, and one new site [LA169209] determined ineligible for NRHP. The newly documented site [LA169209] could potentially be destroyed by the proposed mining project. The

existing site LA34767 will be preserved and avoided by realigning the existing access/proposed haul road and closing use of the old road section with barrier fencing. Woods Canyon states that if the NRHP-eligible site LA34767 is avoided, the proposed mine project will have no significant effect on cultural resources, and archeological clearance for the project is recommended (Shanks and Robinson 2011).

Identification efforts for Native American Religious Concerns included reviewing existing published and unpublished literature and personal communications with Jim Copeland, BLM/FFO archaeologist. On January 13, 2011, Woods Canyon met with Ojo Encino Chapter President, Roger Toledo, and another chapter member, Watson Castillo, who voiced no concerns regarding traditional cultural properties (TCPs) within the Survey Area. Woods Canyon's cultural survey report identifies a document "Report of An Ethnographic Study and Archaeological Review of Proposed Coal Lease Tracts in Northwestern New Mexico" by Frederick F. York and Joseph C Winter, which identified a tree documented as a TCP located within Section 9 more than 0.5 miles from the Survey Area. The Survey Area does not contain any trees or tree stumps. Jim Copeland advised Ecosphere about the juniper tree and was unaware of any additional TCPs in the area (Jim Copeland, BLM/FFO, pers. comm., January 24, 2011).

A paleontological resource survey was conducted by a BLM-permitted Ecosphere paleontologist on December 13, 2010. No paleontological resources were identified during the field survey.

1.4.11 Noise Levels

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 levels of noise 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 1**. Noise levels at the Permit Area are expected to peak at a maximum of near 85 dBA during operating hours.

Table 1. Examples of General Noise Levels in Common Activity Areas

Noise Generator	General Noise Level (dBA)
Construction Site	85
Caterpillar D6 Bulldozer	81[1]
Caterpillar 980 Front End Loader	84[1]
Pick-up Truck	80
Automobile	65
Residential Area (daytime)	50
Residential Area (nighttime)	45
Rural Area (nighttime)	35

Noise Generator	General Noise Level (dBA)
Hearing threshold	20

[1] average noise level readings taken at 15 m (USDT-FHWA 2010)

The BLM's noise standard used to determine compliance with the BLM/FFO's Notice to Lessees 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). The increase in noise levels associated with the mining activity 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. Maximum construction hours will be limited to daylight hours, five days a week. A minimal amount of equipment would be used on site. All equipment would comply with industry and New Mexico Department of Transportation standards (Ecosphere 2011b).

There is an existing homesite located approximately 0.3 mile southeast of the Project Area; however it was unoccupied during the January 2011 field surveys. No other residences occur within a one-half mile radius of the Permit Area. Noise levels in the area are generally low given its rural nature.

1.4.12 Air Quality

The area of the mine lease 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. The 2003 BLM/FFO Proposed Resource Management Plan (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 for ozone. In March of 2008, the U.S. Environmental Protection Agency (USEPA) announced a new primary 8-hour standard of 0.075 ppm. 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. Currently McKinley County is in attainment of all federal NAAQS.

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/m^3 daily $PM_{2.5}$ NAAQS is not expected to be exceeded (Ecosphere 2011b).

1.4.13 Traffic Conditions

Star Lake Road is used by local residents, oil and gas workers, mining traffic, and travelers between Ojo Encino and Thoreau or Grants, New Mexico. Star Lake Road is a dirt road with little maintenance, (i.e.

not plowed during snowstorms, few installed culverts). The mine would have approximately 3-4 haul truck-trips per day delivering the humate from the mine to the desired processing locations. Light vehicles would be used to transport the employees to and from the site in the mornings and evenings. Observations of traffic levels on Star Lake Road during field visits to the site suggested the road gets approximately 1-2 cars per hour, with the majority of the traffic being local residents (Ecosphere 2011*b*).

1.4.14 Demographics

Demographic information for the area is based on information included in the *Chapter Images 2004; Profiles of 110 Navajo Nation Chapters* (Navajo Nation 2004) and based on information from the 2000 United States Census (US Census Bureau 2000). The total population of the Ojo Encino chapter was documented as 709 persons, 350 males and 359 females. The majority of the people were between 5 to 9 years old and the second highest between 25 to 34 years old, the median age being 21.9 years. American Indians/Alaska Natives made up 97.9 percent of the population (Navajo Nation 2004; U.S. Census Bureau 2000).

MMC expects to recruit mine workers from Cuba, Ojo Encino or other small New Mexico towns close to the mine.

1.4.15 Visual Setting

The 80-acre Project Area is located in a broad valley bounded on the north by Sisnathyel Mesa and the south by Chaco Mesa. The valley bottom is dissected by a series of named dendritic drainages including Papers Wash, Salazar Wash, and Torreon Wash and numerous unnamed drainages, and is punctuated by isolated eroded mesas, buttes, and ridges. The proposed 80-acre Project Area has been designated by the BLM 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.

1.5 Proposed Operations

It is estimated that the total mineable humate resource within the 10-acre Permit Area is approximately 5 feet in thickness throughout the Permit Area. Based on the 10-acre Permit Area and a 5-foot thick humate seam, the estimated total bank cubic yards within the Permit Area would be 80,667 (approximately 72,600 tons assuming a consistent 5 foot seam thickness and a density of 0.9 tons per cubic yard). Total annual extraction is estimated to be between 8,000 and 10,000 cubic yards per year (Lown 2011). The topsoil and overburden to be removed is approximately one to three feet deep. The topsoil (top 6 to 12 inches of soil) and remaining overburden will be salvaged separately, and placed in separate stock piles in a designated stockpile location outside of the active mining area for use during reclamation (see **Figures 4A and 4B**).

MMC proposes to operate the mine Monday through Thursday from 8:00 am to 4:00 pm during the months of March through October, with the exception of holidays (New Years Day, Easter, Memorial Day, July 4, Labor Day, Thanksgiving, and Christmas) (Lown 2011).

To accomplish the mining activities and proper reclamation of the Permit Area and Project Area, the proposed mining operations will follow four main Stages as outlined below:

1.5.1 Stage I: Initial Permit Area Mine Operation Setup

Step 1: Realignment of Proposed Haul Road/Protection of Natural Resources

As a first priority, the center portion of the existing access road between Star Lake Road and the Permit Area will be closed off to travel, and the road re-aligned as shown on **Figure 4A**. Barriers will be constructed where indicated on **Figure 4A** from metal T-posts and either wire strands or orange plastic safety fence between posts, to prevent travel on this section of road and to protect natural resources. Barriers should be clearly visible to any vehicles traveling the road, both during daylight hours and after dark. If barriers are disturbed or destroyed at any time during the duration of the Permit, they will be replaced at the same location within 24 hours. This re-aligned road henceforth will be referred to as the Haul Road.

Step 2: Construction of Haul Road

To properly access the site and deliver the humate to the processing facilities a Haul Road approximately 1,770 feet in length and 20 feet wide will be constructed (Figure 4A). The Haul Road will be constructed to meet BLM Gold Book design standards (USDI and USDA 2007). No gravel or other related minerals from new or existing pits on federal land will be used in construction of roads without prior approval from the Surface Managing Agency. A 30-foot long, 18-inch diameter corrugated metal pipe culvert will be installed where the Haul Road crosses the existing bar ditch on the west side of Star Lake Road. The culvert inlet and outlet will match the existing grade at the bottom of ditch so as not to inhibit existing drainage, and a minimum of 12-inches of cover will be placed atop the full length of culvert. Installation of the culvert and Haul Road should not affect the existing buried water line within Star Lake Road's eastern right-of-way. The haul road will not cross any other drainage and no other culverts will be required.

Step 3: Designation of Mine Area Boundary

The Permit Area boundary, including a 20-foot buffer distance, will be marked in the field using 6-foot metal T-posts and fluorescent flagging at 20-foot intervals along a 20-foot offset to the outside of the actual Permit Area boundary (as recommended by the BLM/FFO), and at each corner of the boundary offset. Boundary markers disturbed or destroyed during mining activities will be replaced at the same location within 24 hours. Under no circumstances will the area outside the buffered Permit Area/mining boundary be disturbed.

Step 4: Designation of the Initial Staging/Stockpile Area

A 1.5-acre initial staging and stockpile area will be located in the extreme southeast corner of the Permit Area during the first Phase of mining operations. A staging area large enough to accommodate storage of all personnel vehicles, construction equipment, materials, and supplies, and a secondary containment area for storage of fuel and hazardous materials (see Hazardous and Waste Materials Management Plan for more detail) (**Appendix B**) will be designated by lathe and flagging within the boundaries of this 1.5-acre area. The remainder of the area will be used to stockpile topsoil and overburden from the mining operations. Relocation of the staging/stockpile area during the life of the mining and reclamation operations will be minimized as much as possible; however, as mining and reclamation activities progress, the staging area will need to be moved once to allow for extraction of the humate beneath the previous staging area.

1.5.2 Stage II: Operation

Mining operations will move forward in distinct Phases, according to the Schedule of Mining and Reclamation Work (Refer to **Table 3** in the Reclamation Plan). The following steps apply throughout the mining operation and within each Mining Phase.

Step 1: Removal of Topsoil and Overburden

Topsoil and overburden will be removed using a bulldozer and stockpiled in the designated location within the Permit Area (**Figures 4A and 4B**) for reuse during reclamation. Topsoil will be segregated and stored separately from subsurface overburden materials to avoid mixing during construction, storage, and interim reclamation. Subsurface overburden materials should never be placed on top of topsoil material at any point during the mining operation. Topsoil and overburden will be removed in 0.5-acre increments within each Mining Phase, with no greater than 2.0 acres of excavated topsoil and overburden stockpiled at any given time. This will correlate with Stage II-Step 4: Moving Reclamation. Flagstone or sandstone fragments larger than 12 inches by 12 inches will be removed from the topsoil and stockpiled with subsurface material stockpiles.

Stockpiles will be located and protected so that wind and water erosion are minimized and reclamation potential is maximized. Erosion control and slope stabilization measures for the stockpiles will be implemented according to the Storm Water Pollution Prevention Plan (SWPPP) (**Appendix C**).

Step 2: Removal of the Humate

Using a front-end loader, the humate will be pushed up into a collection pile and loaded into a haul truck and 36-foot end-dump trailer. The haul truck will deliver the humate to Menefee Mining Corporation's facility in Cuba, New Mexico for processing.

Step 3: Product Verification & Delivery of the Humate

Daily production rates will be determined based on weight logs recorded for each load upon arrival at the truck scales at the processing facility. Daily and monthly logs will be presented as verification to the

BLM. Copies of all records will be kept at the MMC processing plan office in Cuba, New Mexico and at the MMC corporate offices in Dallas, Texas.

Step 4: Moving Reclamation

For Mining Phase I Only: Once the maximum amount of humate has been extracted from the 1.5-acre Mining Phase I (Figure 4B) (expected within fifteen (15) to eighteen (18) months), the overburden stockpiled from the mining operation will be re-placed and contoured according to **Figure 5A**: Anticipated Reclaimed Mine Surface. The topsoil stockpiled will then be placed evenly across the re-contoured site. Seeding and mulching of this area will occur only after all subsequent Mining Phases within the Permit Area have been completed and reclaimed.

For All Other Mining Phases: Once the maximum amount of humate has been extracted from Mining Phase II (1.5 acres) (Figure 4B) reclamation of the mined area will be initiated (see Reclamation Plan for details). Within Phases III and IV or the mining operation, when the first half of the Phase is completed (1.75 acres), reclamation of the mined area will be initiated. This will minimize the "open" acreage of the mining site to a maximum of 1.75 acres at any given time. This reclamation pattern will continue through the entire remaining excavation portion of the mining operation. Monitoring of reclaimed areas for revegetation success (see Reclamation Plan for details) will begin upon completion of the first reclamation area, and will incorporate new reclamation areas as each is completed.

1.5.3 Stage III: Reclamation/Final Closure of Permit Area

Step 1: Final Mine Activity Reclamation

Final reclamation of the 10-acre Permit Area will be initiated as follows (see Reclamation Plan for details):

- Surface recontouring of all remaining mined areas, stockpile areas, and staging areas
- Revegetation of all remaining mined areas, stockpile areas, and staging areas

Step 2: Designation of On-Site Haul Road

Since this mining and reclamation plan is for a 10-acre Permit Area within a larger 80-Acre Project Area, successive future mining of areas adjacent to the Permit Area is expected. Designating an On-Site Haul Route across the Permit Area following re-contouring and reclamation will provide access to future Permitted Mining Areas while minimizing impacts to previously mined and reclaimed areas. The On-Site Haul Road will be 20-feet wide and designated by lathe and flagging placed at 30-foot intervals along both edges of the road. If possible, the alignment of the On-Site Haul Road should be carefully planned to serve all future mining operations within the 80-acre Project Area without having to re-locate or re-align the road.

Full reclamation of all haul roads will be achieved at the end of all mining operations within the Project Area (see Stage IV, below).

Step 3: Monitoring and Maintenance

- All reclamation areas within the Permit Area will be monitored for revegetation success (see Reclamation Plan for details).
- Reseeding will occur as necessary to achieve revegetation success.
- Invasive/noxious species shall be monitored and treated.

Step 4: Final Closure and Bond Release

When reclamation success has been determined by the BLM to have been achieved, the BLM will release the liability and bond and the mine site Permit Area will be considered Closed.

1.5.4 Stage IV: Final Reclamation of the Haul Road (Project Area)

At the end of all mining operations within the entire 80-Acre Project Area, full reclamation of all haul roads including the on-site haul road and the haul road between Star Lake Road and the Project Area will be achieved as follows (see Reclamation Plan for details):

- Disking of all haul road areas to minimum 12-inch depth
- Surface recontouring of all haul road areas to match adjacent existing grade
- Removal of culvert at Star Lake Road
- Revegetation of all haul road areas
- Reclamation protection

1.6 Equipment and Personnel Information

The proposed mine would employee two full-time employees working eight-hour shifts, four days a week (Monday through Thursday), excluding holidays. Work will occur from 8:00 a.m. to 4:00 p.m. during the months of March through October (Lown 2011). All vehicles will be restricted to haul roads and active mine operations. Once areas of reclamation are complete, no vehicles will be operated within the reclaimed areas except for the on-site haul road and for restoration maintenance or rehabilitation activities. The following equipment for each phase of the project would be operated by the two employees:

Table 2. Equipment Required for Mining Plan

Equipment	Stage I (Initial Setup)	Stage II (Operation)	Stage III (Reclamation/Closure)
Front-End Loader		X	X
Bulldozer	X	X	X
Water truck	X	X	X
Haul Truck & 36-foot End Dump Trailer		X	X
Farm Tractor		X	X
Disking Implement			X
Harrow			X
Drill Seeder			X
Roller/Crimper			X
Portable Toilet	X	X	X

1.7 Production Verification/Inspection and Enforcement

Based on Chapter 6, Production Verification/Inspection and Enforcement (PV/IE), of the draft *Office Management Plan*, by BLM/FFO for the range of extracted minerals of 5,000-15,000 bank cubic yards per year the following equipment/procedures will be used: tape measure and compass or survey grade GPS, truck count, and truck scales.

1.8 Committed Procedures

The following procedures will be abided by to prevent degradation or destruction to the listed items.

1.8.1 Roads, Residence, Bridges, Etc.

The travel route between the mine site and the processing plant in Cuba, New Mexico is expected to follow Star Lake Road to State Highway 197 to Sandoval County Road 11, south and east of Cuba. The processing plant is located on County Road 11, approximately 2 miles south of the intersection of the County Road and US Highway 550. Speed limits will be followed and use will be limited to only necessary travel (e.g., partial loads will not be transported). The maximum weight on bridges will not be exceeded. When encountered, right-of-way will be given to the nearby residents. Loads will be covered according to New Mexico Department of Transportation (DOT) standards to avoid damage to windshields, etc.

1.8.2 Post Mining Land Use

The entire 10-acre Permit Area will be properly reclaimed and returned to a grazing land use area for livestock and wildlife.

1.8.3 Surface and Ground Waters

A Storm Water Pollution Prevention Plan shall be implemented and maintained through the life of the project and following—until final reclamation has been achieved. The Storm Water Pollution Prevention Plans are provided as **Appendix C.** Hazardous materials in the form of fuel and lubricants for the construction and operation equipment would be contained in designated areas, which will include secondary containment (see Hazardous and Waste Materials Management Plan, **Appendix B**).

1.8.4 Vegetation and Wildlife

All activities within all Stages of mining operations will be restricted to the boundaries of the Permit Area. Extreme care will be taken to avoid all wildlife or livestock within the roads and surrounding area.

1.8.5 Air Quality (dust and emissions control), Noise, Light, and Vibration

The site will be watered with a water truck 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.

1.8.6 Visual Resources

Impacts to visual resources are related to land disturbance, amount and types of equipment, machinery, and vehicles, infrastructure, and project emissions (e.g., fugitive dust, air releases). Siting and design considerations to reduce, avoid, or mitigate visual impacts at the mining site will include:

- Minimization of all surface (ground) disturbances for all road or facilities infrastructure.
- Location of facility infrastructure or equipment storage will not be on high land features and along "skylines" that are readily visible from nearby sensitive viewpoints, to the extent practicable.
- Equipment and vehicles will be kept within the limits of the initially disturbed areas.
- Utilization of dust suppression techniques to minimize impacts of vehicular traffic and wind on roads and exposed soils.
- Avoiding impacts to public road right-of-ways. Existing vegetation and topography within the right-of-ways will be left undisturbed.
- Regular maintenance of the mining site during operation of the mine. Inoperative equipment and poor housekeeping, in general, creates a poor image of the activity in the eyes of the public.
- Minimization of vehicular and human activities as practicable during mine operations. Neither vehicular nor human activities will occur outside of daylight hours to minimize disturbance to neighboring landowners.

1.8.7 Safety

Mining and reclamation operations will be designed and operated to safeguard the public. Caution signs and Unauthorized Personnel-Keep Out signs will be posted at the site. At a minimum, a locked cable gate with steel posts will be installed on the haul road just west of the junction of the Haul Road and Star Lake Road prior to any ground disturbance, and maintained in working order throughout the life of the mining operation until the entire 80-acre Project Area has been reclaimed. Pit/quarry side slopes will be regularly graded to angle of repose or less to prevent slope collapse, or trench stabilizers will be used. Final slopes of all reclaimed areas will not exceed 10%. Shafts, adits, and tunnels are not part of the humate mining process and will not endanger personnel or the public. All mine vehicles will be required to follow posted speed limits, and all vehicles will adhere to load limits outlined by the New Mexico and Navajo Departments of Transportation. When encountered, right-of-way will be given to the nearby residents. Loads will be covered according to New Mexico DOT standards to avoid damage to windshields, etc. A Fire Management Plan is provided in **Appendix D.**

1.8.8 Archeological, Historical, Cultural Sites

If any archeological or cultural artifacts are discovered during any of the operational phases or mining phases, all activities must be halted and the BLM immediately contacted.

1.8.9 Paleontological Resources

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.

2. RECLAMATION PLAN

2.1 Objectives

The objective of Menefee Mining Corporation's humate mining operation is to extract the permitted mineral resource and reclaim all disturbed areas of the mining operation to a condition as good as or better than the pre-mining surface. The reclaimed Permit Area will be a self-sustaining ecosystem matching the undisturbed ecosystem surrounding the operation.

Pre-mining land use is livestock grazing and wildlife habitat. Post-mining land use is expected to be the same or similar. The location of the mining operation is within the current Star Lake Community grazing allotment, which receives moderate to heavy grazing use by cattle, sheep, and horses.

The reclaimed area shall be stable and exhibit none of the following characteristics:

- Large rills or gullies (greater than 3 inches wide or deep)
- Perceptible soil movement or head cutting in any drainages
- Slope instability on or adjacent to the reclaimed area

2.2 Equipment and Personnel Requirements

2.2.1 Visual Resource Standards

The reclaimed landscape will approximate the visual quality of adjacent and surrounding areas with regard to surface contouring, drainage patterns, vegetation, and visual texture. All facilities and infrastructure will be removed upon completion of mining activities—as per the "moving" reclamation plan. Disturbed surfaces, access roads, and the mine site will be restored to as near-natural contours as feasible. All disturbed areas will be revegetated contemporaneously with disturbance activities using plant species appropriate to the site (see **Table 4**).

2.2.2 Reclamation Sequence

The reclamation of the mine site shall be accomplished in concert with the mining activities under a moving reclamation schedule based on mining Phases. Reclamation of Phase I will deviate from the moving reclamation schedule, and is described further below. Beginning with Phase II, when the mineral resource (humate) has been extracted from a mining Phase and as the mining operation moves into the next mining Phase, reclamation of the just-completed mining Phase shall be initiated. This sequence shall continue through all Mining Phases as described in the Schedule of Mining and Reclamation Work (Table 3).

For Phase I, once the humate has been extracted from the mined area the area will be re-contoured using stockpiled overburden and stockpiled topsoil will be evenly placed over the final re-contoured subgrade. The Phase I mined area will then be used as a staging/stockpile area for the remaining mining

Phases. Soil amendment, seeding and mulching of the Phase I area will be postponed until Final Reclamation of the Permit Area.

The Schedule of Mining and Reclamation Work as shown does not accommodate for weather contingencies, but reclamation activities that cannot be completed under the schedule due to weather should be completed as soon as the weather allows, limiting exposure of non-reclaimed surfaces.

Reclamation of mined areas shall occur as follows:

- Surface Recontouring
    - Backfill of excavated areas with stockpiled subsurface overburden materials
    - Contouring of reclaimed subsurface
- Seedbed Preparation
    - Even placement of stockpiled topsoil over area to be reclaimed
    - Integration of soil amendment into topsoil
    - Disking/Harrowing
- Seeding and Mulching
    - Seed application by broadcast or drill seeding
    - Application of weed-free straw mulch
    - Stabilizing mulch through punching
- Reclamation Protection
- Invasive/Noxious Species Control
- Monitoring
    - Baseline plots established
    - Two monitoring plots established within reclaimed Phase, with two transects each

The final phase of reclamation in the 10-Acre Permit Area will be final grading, soil preparation, seeding and mulching of the designated staging/stockpile area, which was the first area to be mined.

Table 3. Schedule of Mining and Reclamation Work

Mining Phase	Operation	Task	Expected Task Duration (days)*[1]
PHASE I (1.5acres)	Define Initial Staging Area	Flag Staging Area and Construct Secondary Containment Area	4 days
	Topsoil and Overburden Removal	Stockpiling	8 days
	Mining	Humate Removal	188 days
	Reclamation	Surface Recontouring	8 days
PHASE II (1.5 acres)	Define Staging Area within Phase I Area	Flag Staging Area and Construct Secondary Containment Area	4 days
	Topsoil and Overburden Removal	Stockpiling	8 days
	Mining	Humate Removal	188 days
	Reclamation	Surface Recontouring	8 days
		Seedbed Preparation	4 days
		Seeding and Mulching	4 days
PHASE III (3.5 acres)	Topsoil and Overburden Removal	Stockpiling	8 days
	Mining	Humate Removal	440 days
	Reclamation	Surface Recontouring	8 days
		Seedbed Preparation	4 days
		Seeding and Mulching	4 days
PHASE IV (3.5 acres)	Topsoil & Overburden Removal	Stockpiling	8 days
	Mining	Humate Removal	440 days
	Reclamation	Surface Recontouring	8 days
		Seedbed Preparation	4 days
		Seeding and Mulching	4 days
FINAL PERMIT AREA RECLAMATION (1.5 acres)	Reclamation of Phase I Area (used as Staging/Stockpile Area throughout all other Phases)	Surface Recontouring	8 days
		Seedbed Preparation	4 days
		Seeding and Mulching	4 days
	Designation of On-Site Haul Road (for subsequent mining in adjacent areas, under separate permit(s))	Lathe and Flagging	2 days
FINAL HAUL ROAD	Reclamation of all Haul Roads	Rip Haul Road/Recontouring	8 days

Mining Phase	Operation	Task	Expected Task Duration (days)*[1]
RECLAMATION (approx. 1 to 3 acres)		Seedbed Preparation	4 days
		Seeding and Mulching	4 days

*Weather Permitting
[1]Based on Proposed Operations (Section 1.5)

2.3 Reclamation Activities

2.3.1 Surface Recontouring

Excavated areas will be backfilled with stockpiled subsurface materials only—topsoil will not be placed as backfill. Subsurface soils will then be contoured (graded) to match original slopes as closely as practicable, providing a level or convex free-draining surface. No depressions for collection of water will be allowed, and overall drainage patterns of final grading will match the pre-mining patterns.

2.3.2 Seedbed Preparation

Areas of compacted subsoils shall be ripped to a depth of 12-inches, followed by disking to a depth of 6-inches before placement of topsoil. A minimum of 6-inches of stockpiled topsoil will be placed over the regraded subsurface soils. Existing topsoil on site was sampled and tested in January 2011 to evaluate need for soil amendments and fertilizers (**Appendix E**). Soil testing showed that existing levels of organic matter were more than adequate for native plant establishment. Addition of humate from the mine to the topsoil would only increase the salinity of the soil. Soil amendment recommendations included addition of phosphorus (P) and nitrogen (N), and addition of lime to raise the soil pH.

Following placement of topsoil, soil amendments (**Appendix F**) will be thoroughly incorporated into the soils to a depth of at least 12-inches by tilling, disking, or other suitable method. A nitrogen and phosphorus amendment mix (in the form of urea and monoammonium phosphate) will be applied at a minimum rate of 174.7 pounds per acre of area to be planted. Pelletized lime will be applied at 11.5 tons per acre of area to be planted. Following disking (or similar activity), the surface shall be tine- or chain-harrowed to break up any soil clumps, smooth the surface grade, and prepare the soil for seeding.

2.3.3 Seeding

Seed may be sowed across the mine reclamation area by broadcasting or by drill seeding. Hydroseeding is not recommended for native seed due to poor seed-soil contact percentage and the tendency of the seed to self-sort by weight and size, and therefore resulting in uneven distribution during application.

Drill seeding is the preferred seeding method for this project, since it places seed below the soil surface where it will have good seed-soil contact, and be protected from granivorous rodents and birds. It also ensures the proper seed density if used over the entire site and reduces the loss of seed due to wind and water erosion. Drill seeding may be used on gentler slopes where tractors and drills are safely able to operate, on soil that is well-packed and stable. Drill seeders are specifically designed to concurrently

apply seed of differing size, shape, and weight, including native seed as specified here, and have a much lower rate of clogging and self-sorting.

Drill seeding will be accomplished using a disk-type drill with two boxes for various seed sizes. Drill rows will be 8 to 10 inches apart, and the seed will be placed not less than one-half inch deep or more than one inch deep. Following drilling, a packer or roller will be used to achieve adequate compaction and ensure uniform seed coverage. Drilling will follow the contour, and not up and down the slope. The recommended seed mix and drill seeding rate is provided in **Table 4.**

Where drill seeding is not practicable due to topography, the contractor will hand-broadcast seed using a "cyclone" hand seeder or similar broadcast seeder. Seed will then be raked-in so that it is planted at not less than one-half inch deep or more than one inch deep. Broadcast application of seed requires a doubling of the drill seed rate. The recommended broadcast seeding rate is provided in **Table 4**.

Table 4. Seed Mix and Recommended Drill Seeding Rate

Species	Variety	Percent Seed per Acre	Drill Seeding Rate Pure Live Seed (lbs./acre)	Broadcast Rate Pure Live Seed (lbs./acre)
Blue grama (*Bouteloua gracilis*)	Hachita	24%	0.75	1.5
Alkali sacaton (Sporobolus airoides)	VNS	19%	0.25	0.5
Crested wheatgrass (*Agropyron cristatum*)	Hy-Crest	16%	2	4
Indian ricegrass (*Oryzopsis hymenoides*)	Paloma or Rimrock	14%	2	4
Western wheatgrass (*Pascopyrum smithii*)	Arriba	13%	2.5	5
Slender wheatgrass (*Agropyron trachycaulum*)	San Luis	12%	2	4
Fourwing saltbush (*Atriplex canescens)*	--	2%	1	2
Total:		100%	10.5	21.0

This seed mix may be replaced or modified as directed by the BLM. Any seed mixture used must be certified weed-free, with no primary or secondary noxious weeds in the seed mixture. Seed labels from each bag will be kept on site and made available to the BLM staff for inspection during seeding activities

Seeding will be repeated if a satisfactory stand has not established as determined by the BLM's authorized officer following evaluation after the second growing season (BLM 2003).

2.3.4 Mulching

Previous studies in the southwest have found that mulching with a weed-free material provides newly-sown seeds with the best opportunity to utilize what little precipitation occurs. The mulch benefits the seeding effort by reducing evaporation of soil moisture, reducing wind desiccation, limiting soil erosion,

insulating the surface from temperature extremes, and increasing the infiltration rate of precipitation by protecting the soil surface from surface sealing. It may further aid revegetation in trapping windblown seeds and soil.

Only certified weed-free straw shall be used; use of hay mulch is not allowed nor is it desirable, as it will draw free-ranging livestock and wildlife to the site for forage. Straw should be clean barley or wheat straw. Oat straw will not be used due to its palatability to livestock. Straw mulch can be applied by hand broadcasting or blowing to a uniform depth of two to three inches, equivalent to a rate of about two tons per acre (one 74-pound bale per 800 square feet). When applied properly, approximately 20-40 percent of the original ground surface can be seen.

Straw mulch will then be anchored using one of the following methods:

- *Hand Punching*: A spade or shovel is used to punch straw into the slope at 12-in intervals until all areas have straw standing perpendicularly to the slope and embedded at least 4-inches into the slope.
- *Roller Punching*: A roller equipped with straight studs not less than 6-inches long, from four to six inches wide, and approximately one inch thick is rolled over the slope.
- *Crimper Punching:* Like roller punching, the crimper has serrated disk blades about four to eight inches apart which force straw mulch into the soil. Crimping should be done in two directions with the final pass across the slope.

2.3.5 Reclamation Protection

During and following reclamation activities, MMC will monitor and protect the reclaimed landscape to help ensure reclamation success until the liability and bond are released.

It is recommended that prior to seeding and mulching, all reclamation areas be fenced to protect from livestock use. Fencing should remain until all revegetation performance standards are met, or until the Final Closure and release of liability and bond, whichever comes first. Fencing will meet BLM/FFO standards.

2.4 Final Reclamation of Haul Roads

When all mining and reclamation activities have been completed within the Project Area, all haul roads will be ripped to a minimum depth of 12-inches. After ripping, water bars will be installed. The haul road alignments will then be harrowed using a blanket or pasture harrow to break up any soil clumps, smooth the surface grade, and prepare the soil for seeding.

Seed and mulch will be applied as directed for reclamation of the Permit Area (see sections 2.3.3 Seeding and 2.3.4 Mulching, above).

Following seeding and mulching of the haul roads, and upon final exit of the Project Area with all mining and reclamation equipment, an earthen barricade will be constructed just west of Star Lake Road across the entrance to the main haul road. The culvert placed at the start of the mining project in the bar ditch adjacent to Star Lake Road will be removed. The drainage integrity of the ditch will be restored through any necessary excavation of the ditch to provide positive drainage in the ditch with no impedances.

Invasive and noxious species control and monitoring requirements as described below will be applicable to reclamation of all haul roads in addition to all reclaimed mining areas.

2.5 Invasive/Noxious Species Control

Noxious weed control is a BLM PRMP-required compliance action for surface reclamation. The objective of the BLM/FFO weed management program is to detect invasive plant species populations, prevent the spread of new invasive populations, manage existing populations using the tools of integrated weed management, and eradicate invasive populations, using the safest environmental methods available. Preventing the introduction of noxious weeds into an area is the most effective and economical means of weed control and management.

The BLM/FFO invasive, non-native plant species of concern and the management protocol for each is provided in **Table 5**.

Table 5. Invasive, Non-Native Plant Species of Concern within the BLM/FFO

Common Name	Scientific Name	Management Class
Camelthorn	*Alhagi maurorum*	A - Prevent and eliminate
Woolyleaf bursage	*Ambrosia grayi*	A - Prevent and eliminate
Onionweed	*Asphodelus fistulosus*	A - Prevent and eliminate
Diffuse knapweed	*Centaurea diffusa*	A - Prevent and eliminate
Spotted knapweed	*Centaurea maculosa*	A - Prevent and eliminate
Malta star thistle	*Centaurea solstitialis*	A - Prevent and eliminate
Yellow starthistle	*Centaurea solstitialis*	A - Prevent and eliminate
Houndstongue	*Cynoglossum officinale*	A - Prevent and eliminate
Dyer's woad	*Isatis tinctoria*	A - Prevent and eliminate
Tall whitetop (Perennial pepperweed)	*Lepidium latifolium*	A - Prevent and eliminate
Dalmatian toadflax	*Linaria dalmatica*	A - Prevent and eliminate
Yellow toadflax	*Linaria vulgaris*	A - Prevent and eliminate
Purple loosestrife	*Lythrum salicaria*	A - Prevent and eliminate
African rue	*Peganum harmala*	A - Prevent and eliminate
Jointed goatgrass	*Aegilops cylindrica*	B - Contain and prevent

Common Name	Scientific Name	Management Class
Canada thistle	*Cirsium arvense*	B - Contain and prevent
Leafy spurge	*Euphorbia esula*	B - Contain and prevent
Black henbane	*Hyoscyamus niger*	B - Contain and prevent
Scotch thistle	*Onopordum acanthium*	B - Contain and prevent
Hoary cress (Whitetop)	*Cardaria draba*	C - Manage and suppress
Musk thistle	*Carduus nutans*	C - Manage and suppress
Russian knapweed	*Centaurea repens*	C - Manage and suppress
Bull thistle	*Cirsium vulgare*	C - Manage and suppress
Russian olive	*Elaeagnus angustifolia*	C - Manage and suppress
Saltcedar	*Tamarix spp.*	C – Manage and suppress

Menefee Mining Corporation will take all reasonable precautions to prevent the introduction, establishment, and spread of noxious weeds on lands covered by this mine project and adjacent lands. Noxious weed treatment and control will be done as necessary to promote re-vegetation with native plants and prevent the spread of noxious weeds. Prevention methods will be implemented before, during, and after all mining and reclamation activities to reduce the spread of noxious weeds or the invasion of disturbed areas by undesirable plant species. These prevention methods include:

- Removing all mud, dirt, and plant parts from all off-road equipment used at other projects before moving them into the Permit Area
- Using only defined and established travel routes to minimize soil disturbance.
- Using only certified weed-seed-free straw mulch

The mine owner shall be responsible for weed control on disturbed and reclaimed areas within the limits of the mine and associated roads. The mine owner is responsible for consultation with the BLM and/or local authorities for acceptable weed control methods. During any Phase of mining operations, any noxious or invasive species observed within the mining area will be treated in a manner consistent with the BLM/FFO and McKinley County Noxious Weed Management Program (MSWCD 2010) standards.

Use of pesticides and herbicides shall comply with applicable federal/state laws. Pesticides and herbicides shall be used only in accordance with their registered uses and within limitations imposed by the Secretary of the Interior. Prior to the use of pesticides or herbicides, the mine owner shall obtain from the BLM written approval of a plan showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary. Emergency use of pesticides or herbicides shall be approved in writing by the BLM prior to use.

2.6 Monitoring

At the time of the first reclamation activities on the Phase II mining area, three permanent baseline-monitoring plots will be established in vegetated areas of the surrounding grassland/shrubland vegetation community (bare ground will not be accepted as a baseline monitoring plot) outside of the Project Area. As each subsequent Phase is reclaimed, two permanent monitoring plots will be established within each reclaimed Phase. Two permanent transects will be set up within each of the baseline and reclamation plots. In these transects, species cover, composition, and richness will be analyzed and any invasive species will be recorded. Data gathered from the three baseline plots will constitute the basis of performance standards for determining reclamation success. In addition to transects, at least one permanent photo point will be established at each reclamation monitoring plot and photos taken when transects are completed each year. Additional photo points will be set up at key vantage points to monitor overall mine reclamation success.

Revegetation performance standards will be based on percent canopy cover, species diversity, and invasive species presence and cover. Reclamation will be considered successful when percent canopy cover of each reclamation plots is at least 70 percent of baseline cover, species diversity approximates baseline plot conditions, and invasive species percent cover does not exceed that of the baseline reference sites. The baseline reference sites will provide the target percent cover for both native revegetation and invasive species cover.

In addition, pedestrian surveys covering 100 percent of the reclaimed areas will be conducted for presence of invasive species twice every year (once early in the growing season [May-June] and once after the monsoon season [September]). Invasive species control will adhere to the standards provided by the BLM/FFO and the McKinley County Noxious Weed Management Program.

Monitoring will be conducted every growing season starting in 2012 (after the first reclamation phase is complete) for at least three years or until the performance standards described above are met. Annual monitoring reports will be submitted to the BLM starting in December 2012. Once the performance standards are met, a letter requesting the BLM release MMC from responsibility for the mining area will be prepared and submitted.

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APPENDICES

Appendix A: Project Maps

Appendix B: Hazardous and Waste Materials Management Plan

Appendix C: Stormwater Pollution Prevention Plan(s)

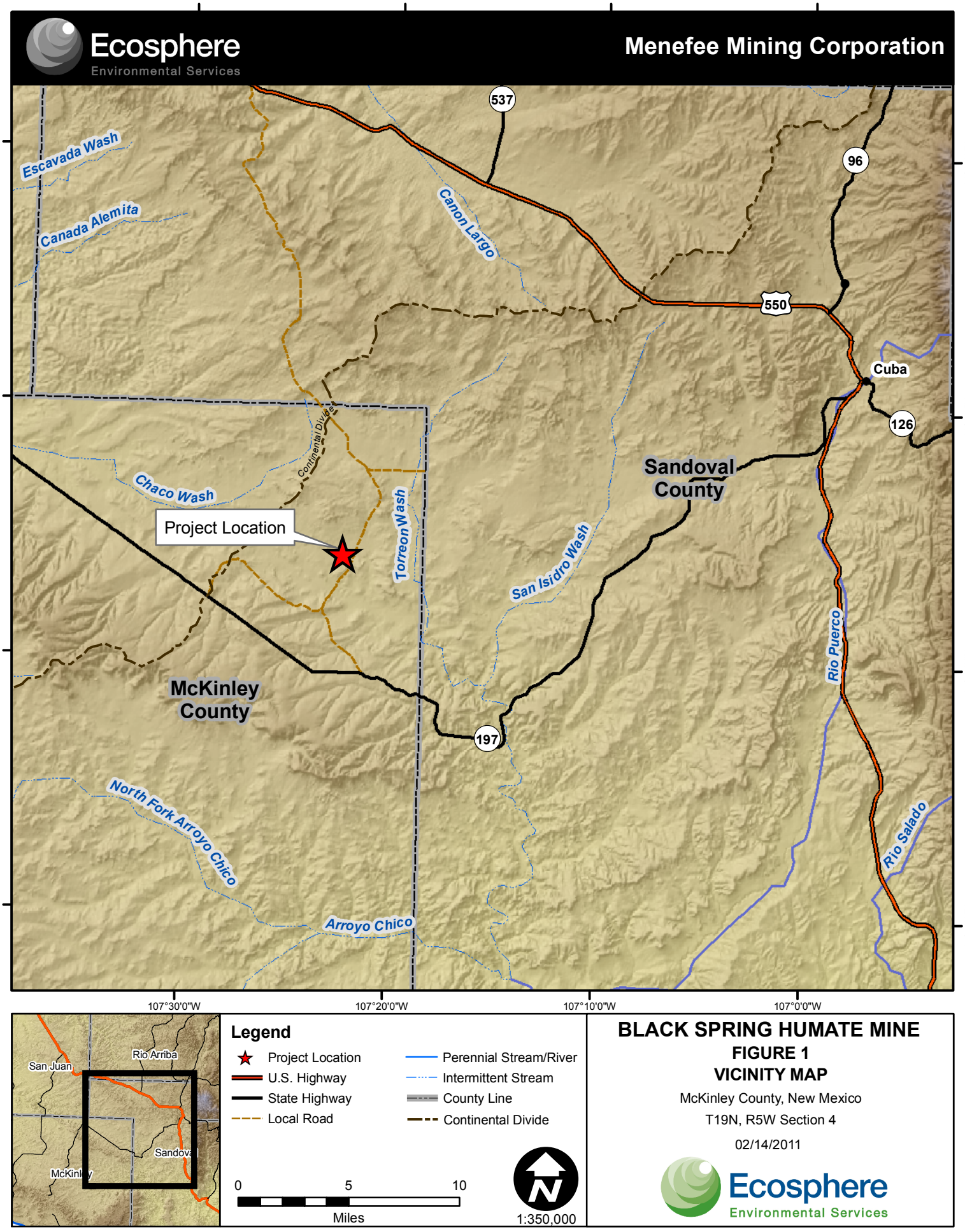
Appendix D: Fire Management Plan

Appendix E: Soil Test Results

Appendix F: Mixed Fertilizer for Reclamation Seeding

Appendix G: Reclamation Cost Estimate

Appendix A
Project Maps


Ecosphere
Environmental Services
Menefee Mining Corporation
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Cuba
Escavada Wash
Canada Alemita
Canon Largo
Continental Divide
Chaco Wash
Project Location
Torreon Wash
San Isidro Wash
Sandoval County
McKinley County
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Rio Puerco
Rio Salado
North Fork Arroyo Chico
Arroyo Chico
36°10'0"N
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35°40'0"N
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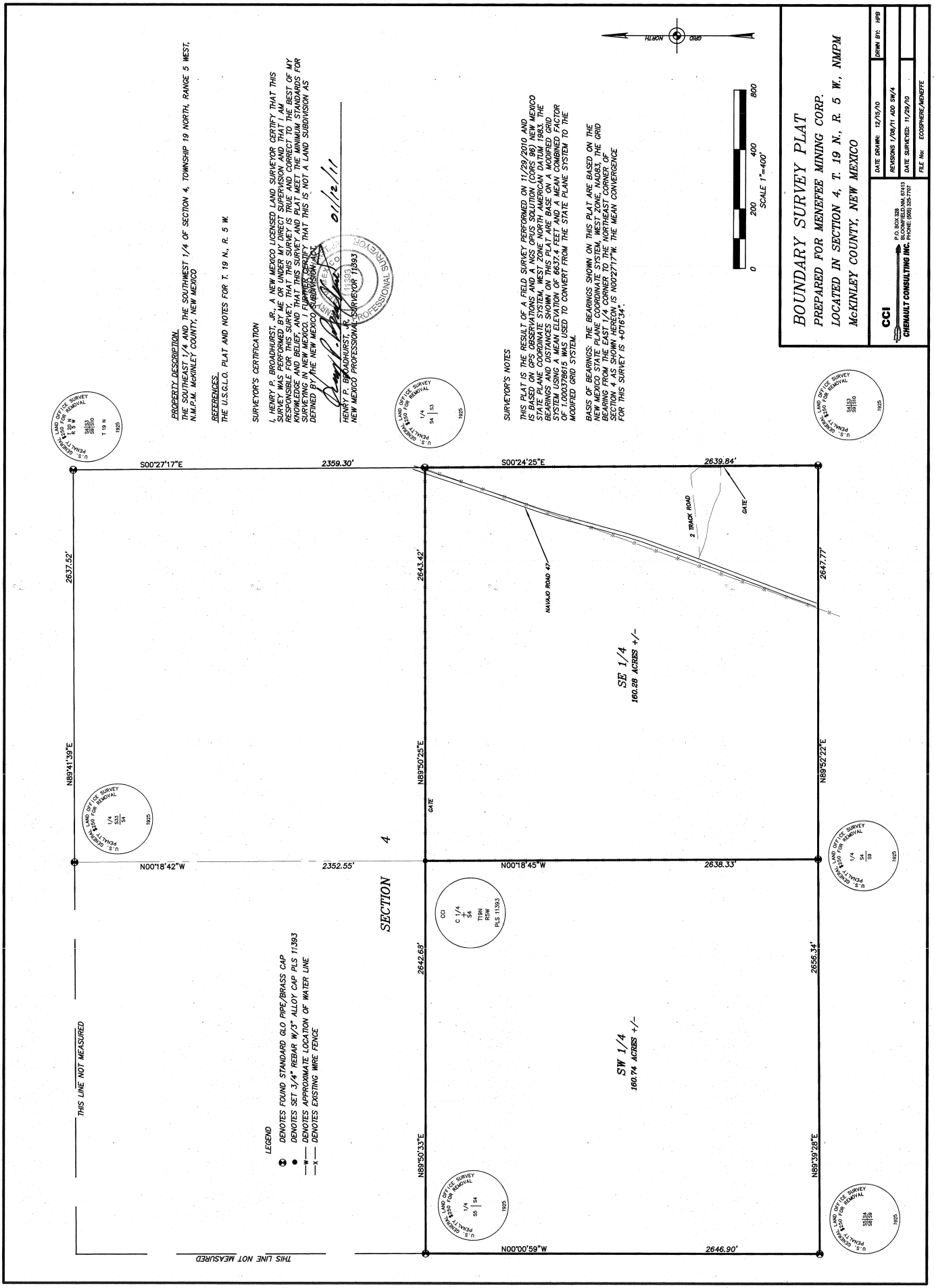
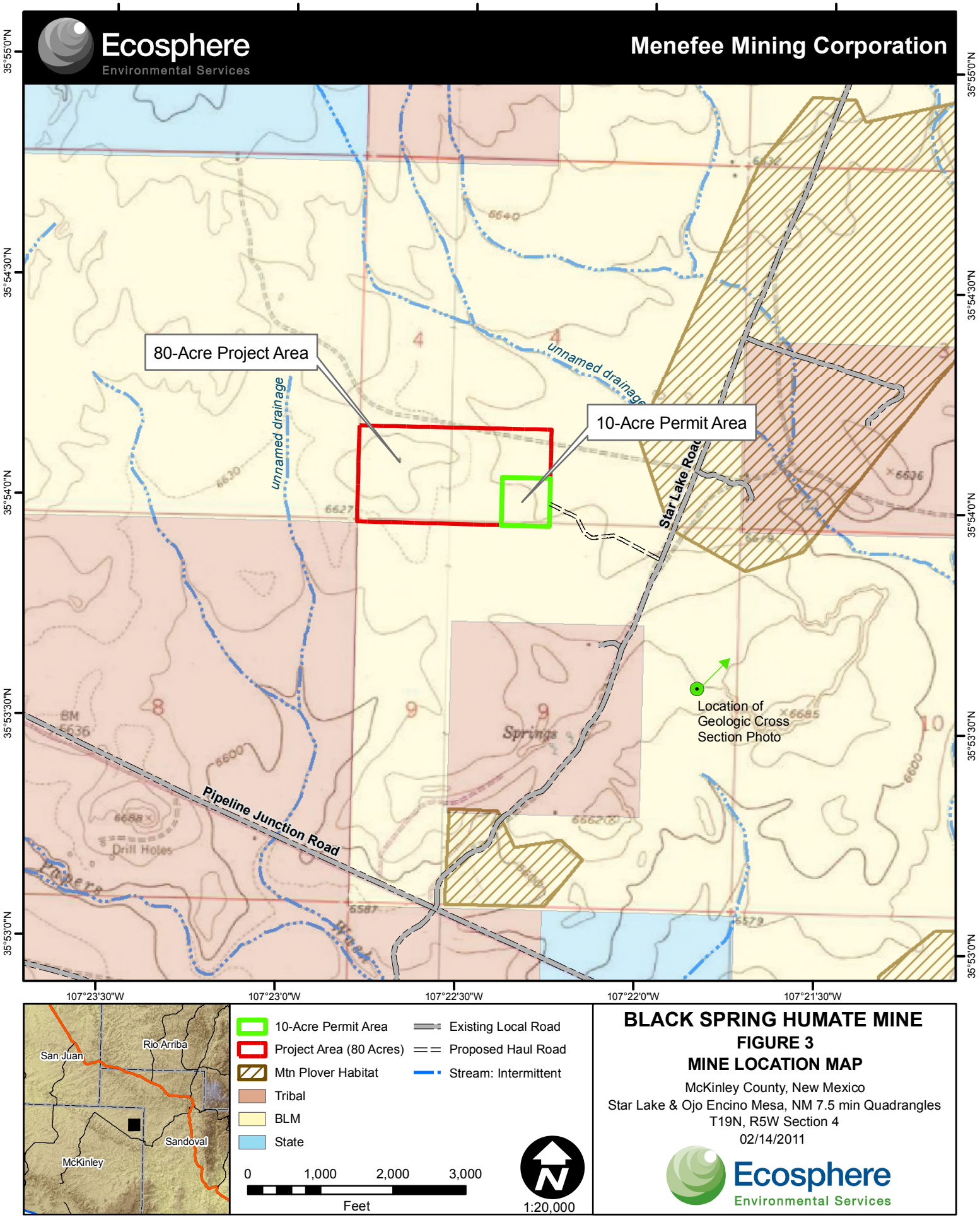
107°0'0"W
San Juan
Rio Arriba
Sandoval
McKinley
Legend
Project Location
U.S. Highway
State Highway
Local Road
Perennial Stream/River
Intermittent Stream
County Line
Continental Divide
0
5
10
Miles
1:350,000
BLACK SPRING HUMATE MINE
FIGURE 1
VICINITY MAP
McKinley County, New Mexico
T19N, R5W Section 4
02/14/2011
Ecosphere
Environmental Services
UTM Zone 13 - NAD 83
Menefee_Fig1_Vicinity.mxd

Figure 2: Boundary Survey Plat





BLACK SPRING HUMATE MINE

FIGURE 3
MINE LOCATION MAP

McKinley County, New Mexico
Star Lake & Ojo Encino Mesa, NM 7.5 min Quadrangles
T19N, R5W Section 4
02/14/2011

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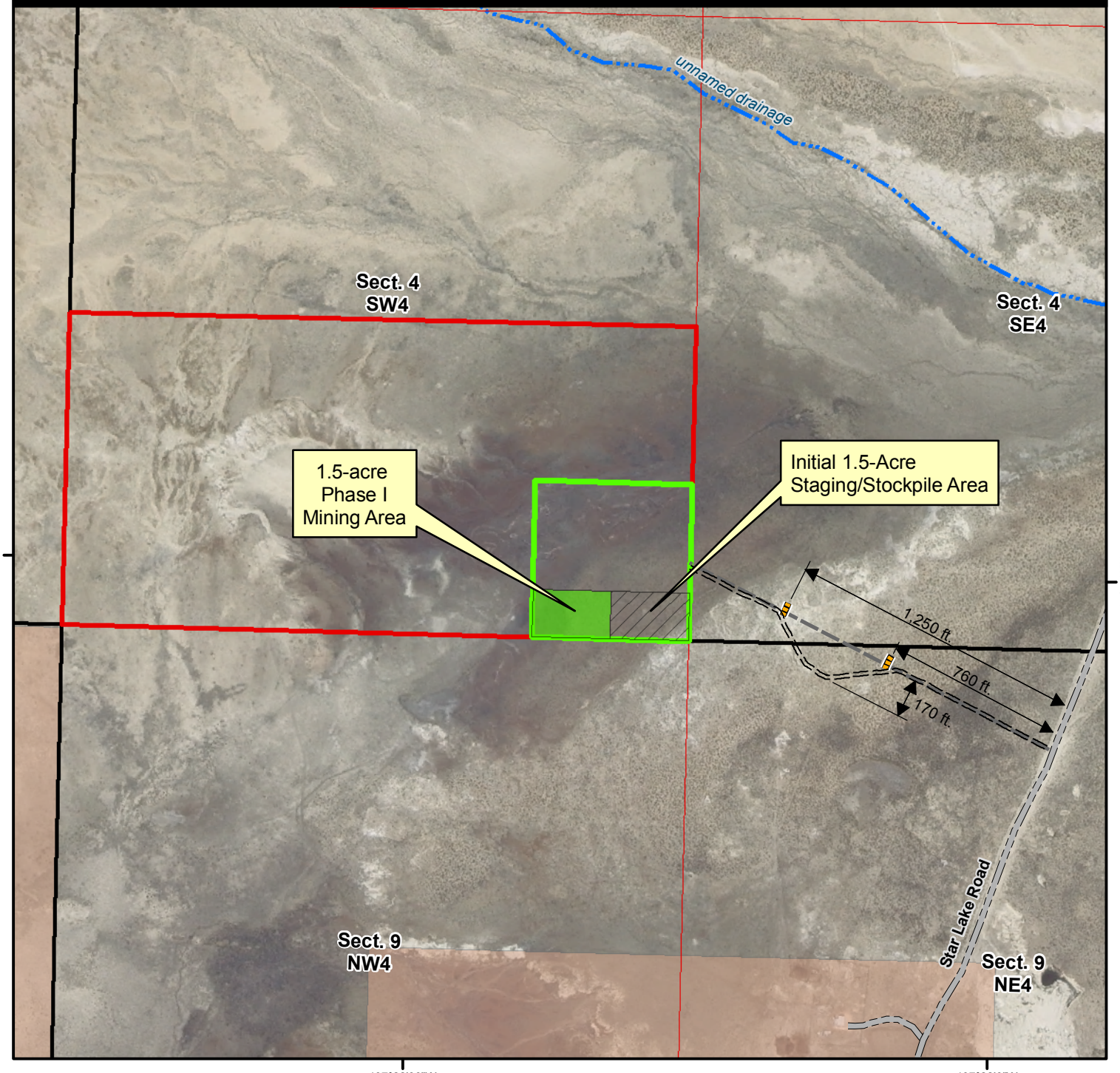
Menefee_Fig3_MineLoc.mxd

Ecosphere
Environmental Services

Menefee Mining Corporation



Legend

- 10-Acre Permit Area
- Project Area (80 Acres)
- Tribal Land
- Section Line
- Qtr-Section Line
- Existing Local Road
- Existing Access Road
- Installed Barrier
- Proposed Haul Road
- Intermittent Stream

0 300 600 900 1,200
Feet

1:7,200

BLACK SPRING HUMATE MINE

FIGURE 4A

PROPOSED MINE PLAN - PHASE I

McKinley County, New Mexico
Ojo Encino Mesa, 2009 Digital Ortho Photo
T19N, R5W Section 4
02/14/2011

Ecosphere
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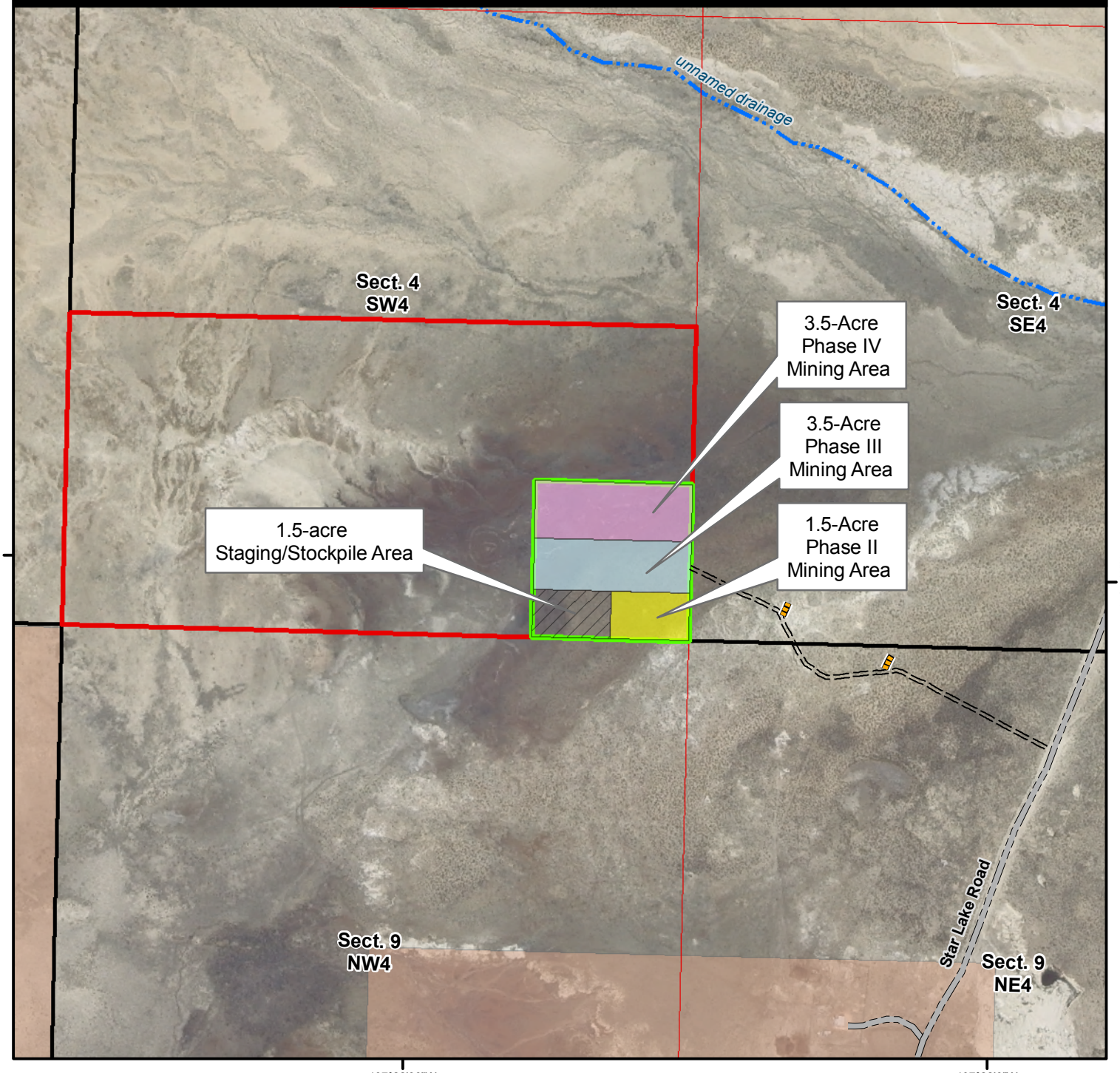
UTM Zone 13 - NAD 83

Menefee_Fig4A_InitMinePlan.mxd

Ecosphere
Environmental Services

Menefee Mining Corporation



Legend

- 10-Acre Permit Area
- Project Area (80 Acres)
- Staging/Stockpile Area (1.5 ac)
- Tribal Land
- Section Line
- Qtr-Section Line
- Existing Local Road
- Proposed Haul Road
- Installed Barrier
- Intermittent Stream

0 300 600 900 1,200
Feet

1:7,200

BLACK SPRING HUMATE MINE

FIGURE 4B

PROPOSED MINE PLAN - PHASES II to IV

McKinley County, New Mexico
Ojo Encino Mesa, 2009 Digital Ortho Photo
T19N, R5W Section 4
02/14/2011

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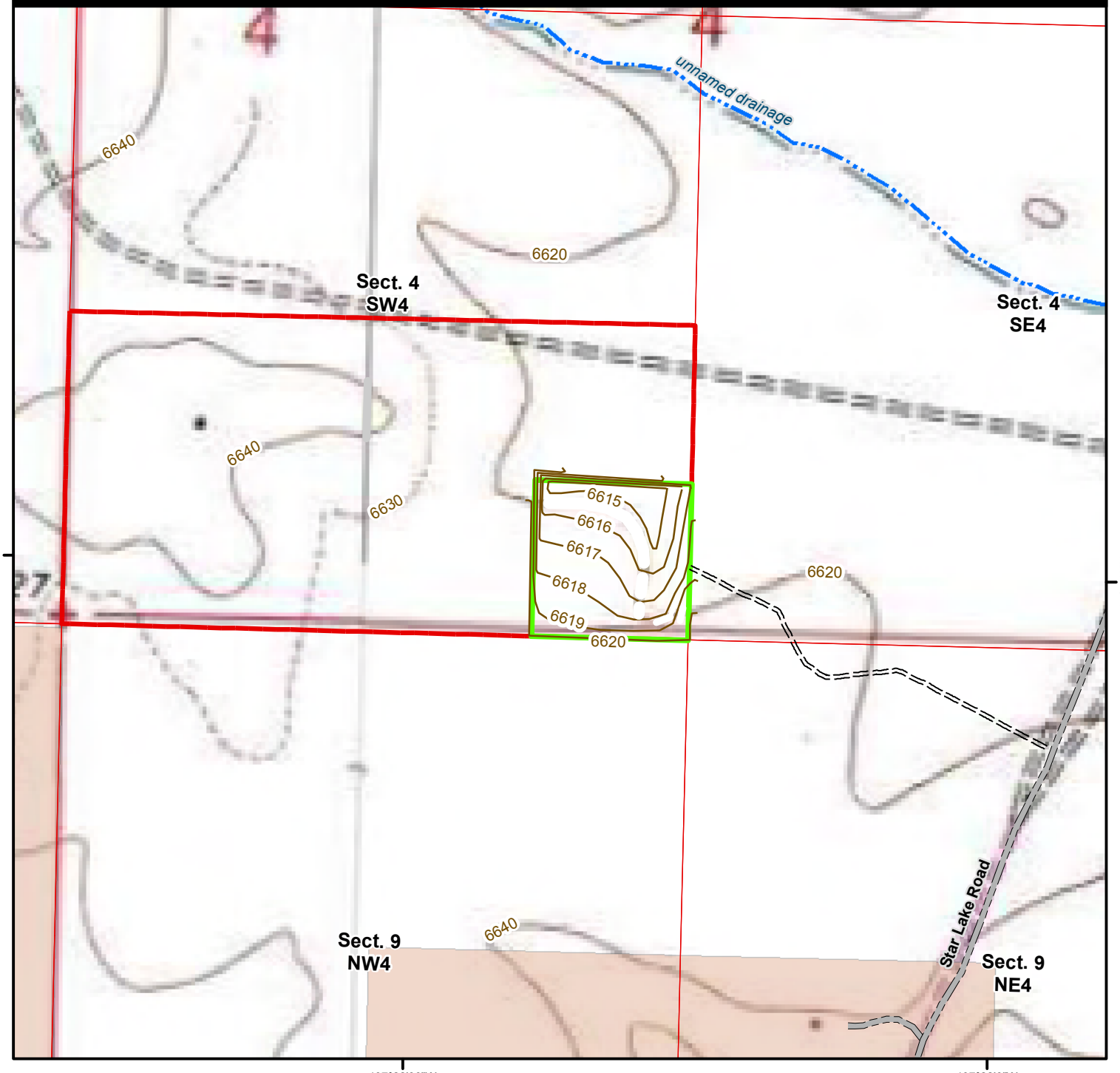
UTM Zone 13 - NAD 83

Menefee_Fig4B_Ph2MinePlan.mxd

Ecosphere
Environmental Services

Menefee Mining Corporation



Legend

- Proposed 1-Foot Contour
- 10-Acre Permit Area
- Project Area (80 Acres)
- Qtr-Section Line
- Tribal Land
- Existing Local Road
- Proposed Haul Road
- Intermittent Stream

0 300 600 900 1,200
Feet

1:7,200

BLACK SPRING HUMATE MINE

FIGURE 5A

ANTICIPATED RECLAIMED MINE SURFACE 10-ACRE PERMIT AREA

McKinley County, New Mexico
Star Lake & Ojo Encino Mesa, NM 7.5-min. Quadrangles
T19N, R5W Section 4
02/14/2011

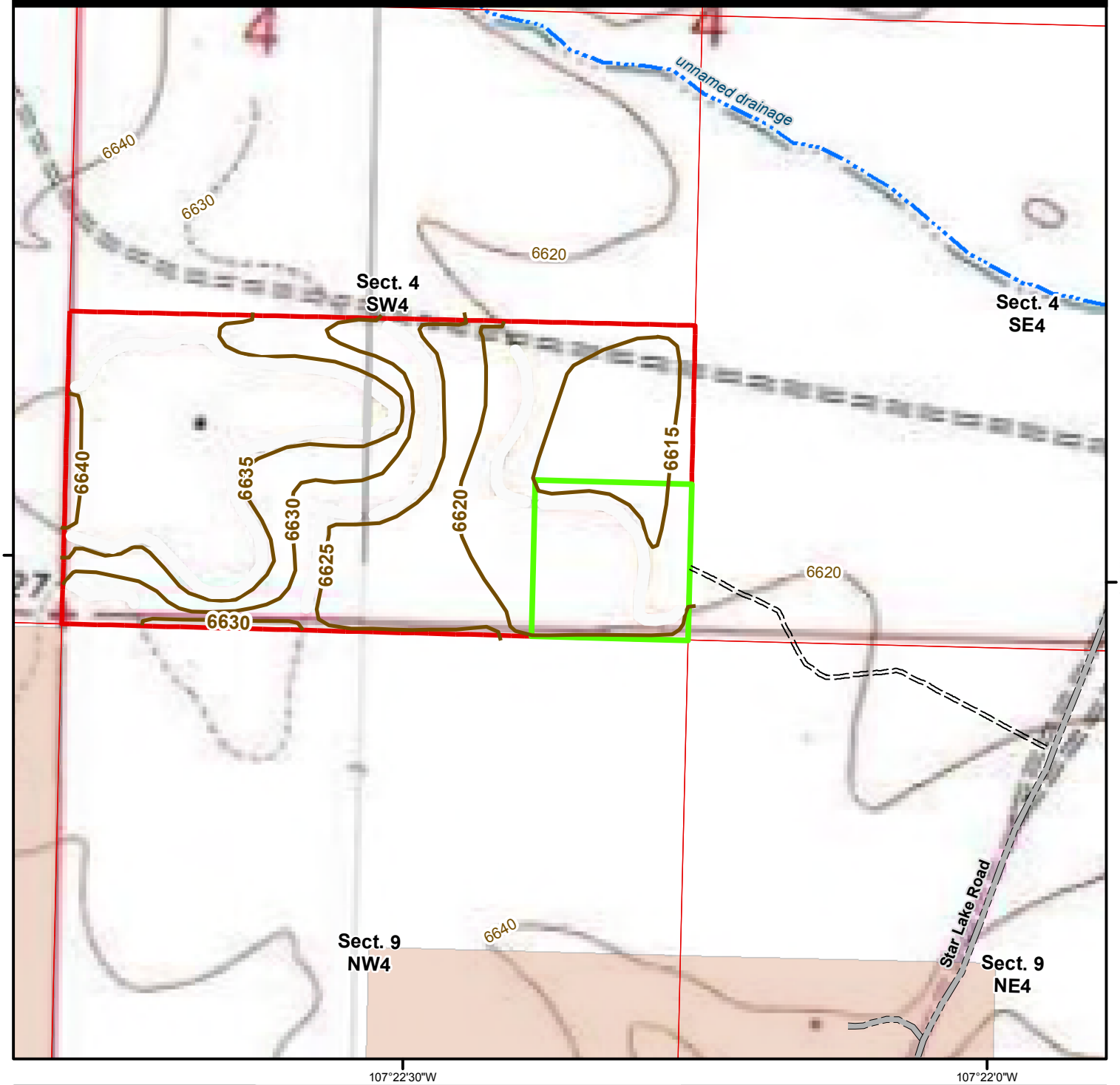
Ecosphere
Environmental Services

UTM Zone 13 - NAD 83

Menefee_Fig5A_Contour10.mxd

Ecosphere
Environmental Services

Menefee Mining Corporation



Legend

- Proposed 5-foot Contour
- 10-Acre Permit Area
- Project Area (80 Acres)
- Qtr-Section Line
- Tribal Land
- Existing Local Road
- Intermittent Stream

0 300 600 900 1,200
Feet

1:7,200

BLACK SPRING HUMATE MINE

FIGURE 5B

ANTICIPATED RECLAIMED MINE SURFACE 80-ACRE PROJECT AREA

McKinley County, New Mexico
Star Lake & Ojo Encino Mesa, NM 7.5-min. Quadrangles
T19N, R5W Section 4
02/14/2011

Ecosphere
Environmental Services

UTM Zone 13 - NAD 83

Menefee_Fig5B_Contour80.mxd

Appendix B
Hazardous and Waste Materials Management Plan

HAZARDOUS AND WASTE MATERIALS MANAGEMENT PLAN

Provisions for management of hazardous and waste materials at the mine site will be established prior to any initial setup (Stage I) or mining operations (Stage II). Establishing appropriate hazardous/waste management practices at this early stage will help avoid potential future costly clean up and mitigation measures. These practices will be used throughout the life of the mine. The Hazardous and Waste Materials Management Plan will be updated prior to commencement of any construction or mining operations, and will be reviewed at least semi-annually throughout the life of the mine.

Unauthorized littering or dumping of any hazardous or other waste materials from the Black Spring Mine or its operations will not be tolerated by the Menefee Mining Corporation.

The following types of wastes are expected to be generated during construction and operation of the Menefee Humate Mine:

- Sanitary facility waste
- Domestic solid wastes
- Industrial hazardous wastes

A summary of the storage and disposal of these wastes can be found in **Table 1**.

Sanitary Facilities

At a minimum, one portable toilet facility will be maintained on site within the Staging Area during all Phases of construction, mining, and closure/reclamation. In areas of high wind, the facility must be properly secured. The facility will be serviced/pumped on a regular basis as determined by the facility supplier. If the facility is vandalized, overturned, or otherwise taken out of working order, the supplier will be contacted immediately for servicing or replacement of the unit. Spills or leaks will be cleaned up immediately by mine operations staff using the spill cleanup kit. Cleanup personnel will wear the proper personal protective equipment during spill cleanup. When in doubt, an authorized sanitary spill cleanup company will be contacted to provide cleanup services. Inspections of sanitary facilities for leaks or spills will be conducted regularly and during heavy winds.

Domestic Solid Wastes

General domestic solid wastes (garbage) are considered non-hazardous materials, and include food wastes, non-hazardous packaging wastes, non-petroleum oils and greases, and other non-hazardous solid materials considered inert.

Due to possibility of theft and vandalism at the mining site, no waste container will be located on-site. All domestic solid wastes shall be collected daily by the mine operator(s), removed from the site, and disposed of legally and properly at an appropriate off-site waste disposal facility. No illegal dumping or littering shall occur.

Industrial Hazardous Materials and Waste

Storage

Industrial potentially hazardous materials expected to be utilized on-site for this mining project include (but are not limited to):

- Diesel fuel
- Oil, grease, and other petroleum-based lubricants
- Hydraulic and transmission fluids
- Antifreeze
- Herbicides

Due to the potential for theft and vandalism, no potentially hazardous materials will be stored on-site. All potentially hazardous materials shall be transported daily to and from the mine site by the mine operator(s) within their work vehicles, and removed from the site daily. Any work vehicle transporting fuel to the site and remaining on site during mine operation hours is considered a fuel storage vehicle, and is required to park within a secondary containment area while at the site. Refueling of equipment from the fuel storage vehicle shall be done while the fuel storage vehicle remains fully within the secondary containment area.

All hazardous materials shall be stored in closed appropriately designed, weatherproof containers during all phases of construction, mining, and reclamation. All containers and storage vessels shall be clearly and properly labeled with:

- The name of the manufacturer or distributor
- Both commercial and common name of the substance
- Chemistry formulation of the substance
- Fabrication and expiration date
- Warnings for safe use of the substance
- First aid and exposure instructions

Product and hazard labels shall be protected from weathering.

Secondary Containment

Within the Staging Area, a secondary containment area shall be constructed by laying an impervious liner on stable, level ground to prevent infiltration to groundwater, and constructing a compacted soil berm to prevent runoff from contaminating other soil or surface water. All surfaces within the secondary containment area including the containment berms shall be sufficiently impervious to contain

any spilled or released material. Containment berms are not to be constructed with topsoil or coarse, insufficiently impervious spoil material.

Secondary containment areas shall be constructed to fully accommodate fuel storage vehicles, and shall enclose an area sufficient to contain and provide secondary containment for one-hundred fifty percent (150%) of the largest single fuel tank. The secondary containment area shall be inspected at regular intervals and maintained in good condition. No potential ignition sources shall be placed or stored inside the secondary containment area. No Smoking signs shall be placed prominently around the secondary containment area so as to be visible from all directions.

Disposal

Potentially hazardous wastes shall be containerized, and these wastes and empty hazardous materials containers shall be periodically removed for disposal at appropriate off-site, permitted hazardous waste disposal facilities, in conformance with all applicable federal and state requirements. At the completion of all mining and reclamation activities, all hazardous materials and hazardous wastes shall be removed from the site and disposed of properly.

The following materials are considered potentially hazardous materials and shall be disposed of at a legal, appropriate, off-site, permitted hazardous waste disposal facility:

- Spent oil filters and petroleum containers
- Used car batteries
- Pressurized or empty aerosol cans
- Empty reagent containers or drums
- Other containers holding resins, solvents, glues/cements, cleaners, or paint
- Used petroleum products
- Absorbent materials used in any spill cleanup

Spill Prevention and Response Plan

All spills or leakages of oil, gas, salt water, toxic liquids or waste materials, blowouts, fires, personal injuries, and fatalities shall be reported by the mine operator to the BLM and the surface management agency in accordance with the requirements of *Notice to Lessees NTL-3A; Reporting of Undesirable Events*, and in accordance with any applicable local requirements.

A spill cleanup kit shall be maintained at the mine site at all times or within an operator's work vehicle at the mine site during all hours of operation. Typically, a spill cleanup kit is capable of cleaning up to a 25-gallon spill. The contents of the spill cleanup kit include absorbent materials, disposable waste bags, and personal protective equipment.

Spills shall be controlled using absorbents. Once the spill source is stopped and the spill is retained, the absorbents shall be removed and placed in the disposable waste bags, and stored in a well-ventilated location until they can be disposed of properly off-site. Petroleum hydrocarbon contaminated soils shall be removed completely and placed in the secondary containment area.

Soils contaminated with petroleum hydrocarbons shall be remediated in accordance with the following procedures:

- Excavate and collect all traces of contaminated soil from the spill site immediately after spill or leakage is discovered.
- Contaminated soils shall be collected in clean, covered 50-gallon containers, clearly labeled 'Contaminated Soils' and stored within the secondary containment area pending disposal.
- Contaminated soil shall be taken to an off-site solid waste facility permitted to accept petroleum hydrocarbon contaminated soils for disposal in accordance with all applicable federal and state requirements.

A record shall be maintained for all spills and shall contain the following information:

- Date and time of the event
- Name of spill reporter
- Location of the spill
- Spill cause
- Spill volume
- Determination of the affected areas
- Any affected communities
- Corrective actions taken

Where required, a report shall be submitted to the pertinent federal or state authorities. Incident documentation shall be kept on file with the Menefee Mining Corporation for a minimum period of five (5) years.

Table 1A. Storage and Disposal of Expected Wasted Materials at the Mine Site

Hazardous or Waste Material	Use	Container	Storage	Disposal (Waste materials and containers)
Diesel Fuel	Equipment Fuel	Barrels/Drums	Within Mine Operator(s) Work Vehicle(s)	Hazardous materials landfill
Oil, Grease & Other Petroleum Products	Equipment Lubricant	Barrels/Drums or Other Containers	Within Mine Operator(s) Work Vehicle(s)	Hazardous materials landfill or appropriate recycling facility
Hydraulic, Transmission and Other Viscous Fluids	Equipment Lubricant	Barrels/Drums or Other Containers	Within Mine Operator(s) Work Vehicle(s)	Hazardous materials landfill
Antifreeze	Equipment Protection	Barrels/Drums or Other Containers	Within Mine Operator(s) Work Vehicle(s)	Hazardous materials landfill or appropriate recycling facility
Herbicide	Noxious/Invasive Species Control	Plastic Containers	Within Mine Operator(s) Work Vehicle(s)	Hazardous materials landfill
Petroleum Hydrocarbon Contaminated Soils	--	Clean, covered 50-gallon container	Within Secondary Containment Area	Solid waste facility permitted to accept petroleum hydrocarbon contaminated soils
Domestic Solid Waste (Garbage)	various	various	Within Mine Operator(s) Work Vehicle(s)	Appropriate solid waste facility
Sanitary Facilities	--	Portable toilet	Portable Toilet	Servicing/pumping to be done by facility supplier

Potential Hazardous Waste Disposal Locations

Facilities permitted to accept Household Hazardous Waste and Petroleum Contaminated Soils (PCSs):

BERNALILLO COUNTY:
Cerro Colorado Landfill
18000 Cerro Colorado SW
Albuquerque, NM 87121
505-761-8300

MCKINLEY COUNTY:
Red Rocks Regional Landfill
101 Red Mesa Bluffs Dr.
Thoreau, NM
(575) 862-8402

SANDOVAL COUNTY:
Rio Rancho Sanitary Landfill
1132 33rd Street
Rio Rancho, NM
(505) 892-2055

SAN JUAN COUNTY:
San Juan County Regional Landfill
78 CR 3140
Aztec, NM 87410
(575) 334-1121

Appendix C
Stormwater Pollution Prevention Plan

Appendix D
Fire Management Plan

Fire Management Plan

An approved fire management plan is required per the Guidance for Implementation of Federal Wildland Fire Management Policy (2009) which states every area with burnable vegetation must have an approved fire management plan. Andrea Coporation will adhere to the Farmington District Fire Management Plan.

Andrea Corporation will adhere to the following safety measures and procedures to avoid and manage potential threats from fires within the mining area. Any wildland fires observed will be reported to the BLM via 911.

Safety Measures

- Smoking will only be allowed in a designated smoking area, with proper fire safe receptacles.
- Fire Extinguishers and shovels will be kept in all vehicles and will the fire extinguishers will be kept up-to-date on servicing.
- Equipment will be parked in designated areas void of thick, dry grass.
- All flammable materials will be kept in proper containers and away from ignition sources.
- All operators and employees will be properly trained in the use of fire extinguishers and safety measures and fire management.

Fire Management

- Use of available water, fire extinguishers, shovels and heavy equipment will be allowed should a fire encroach on the project area and only if the employees are comfortable doing so.
- At the start of a fire, 911 will be called. Fire extinguishers and shovels may be used in the event of a small (less than 10 square feet) fire. Response would likely be from the Cuba or Crown Point Fire Departments.
- Evacuation of all employees will occur should a fire be large or close enough to put anyone at risk.

References

US Department of the Interior, Bureau of Land Management, National Park Service, Bureau of Indian Affairs, US Fish and Wildlife Services, US Department of Agriculture, Forest Service, US Fire Administration; National Association of State Foresters. 2009. Guidance for Implementation of Federal Wildland Fire Management Policy.

US Department of the Interior, Bureau of Land Management. 2010. Farmington District Fire Management Plan.

Appendix E
Soil Test Results

Customer Name: **Karin Freeman, Ecosphere Environmental Services**
138 Pagosa St, PO Box 3564, Pagosa Springs CO 81147
freeman@ecosphere-services.com

Colorado State University
Soil, Water and Plant Testing Laboratory
Room A319, NESB
PHONE: 970-491-5061 / FAX: 491-2930

Lab Number: H672a
Sample ID Number: McKinley Co *Stockpiled topsoil for humate mine reclamation*
Date: 2/12/2011 *No irrigation available. No amendments added. Possible high salts.*

pH **4.7**	pH is Low; Buffer pH=5.6. Add 11.5 tons of lime per acre to help raise the pH to 6.5.
E. C. OR SALTS (Electrical Conductivity) **1.8**	Low. When E.C. is less than 2.0, salinity is not a problem for plant growth.
Lime Estimate Medium	Medium: indicates 1-2% CaCO3 (lime)
Texture Estimate Sandy Loam	74% sand, 8% silt, 18% clay Sandy loam soils drain at moderate rates, about 0.5 to 0.6 inch per hour.
SAR 0.6 (Sodium adsorption ratio)	SAR is low; sodium is not a problem
O. M. 8.0% (Organic Matter)	O.M. content is very high no additional organic matter is needed.
NO_3-N 6 ppm (ppm Nitrate-Nitrogen)	N is low. Apply 40 lb N/A
P 3.4 ppm (ppm Available Phosphorus)	P is low. Apply 60 lb P2O5/A
K 149 ppm (ppm Available Potassium)	Adequate, no additional K2O is needed
Zn 1.3 ppm (ppm Available Zinc)	Adequate, no additional Zn is needed
Fe 113 ppm (ppm Available Iron)	Adequate, no additional Fe is needed
Mn 31.2 ppm (ppm Available Manganese)	Very high; approaching levels of available Mn that may inhibit plant growth. However, available Mn should decrease as the pH is raised with application of lime.
Cu 1.4 ppm (ppm Available Copper)	Adequate; no additional Cu is needed.
B 1.2 ppm (ppm Available Boron)	Adequate. No additional B is needed.
Additional Comments:	Response to fertilizers and lime will depend upon adequate soil moisture.

APPROVED
TITLE Extension Soil Testing Specialist

Appendix F
Mixed Fertilizer and Reclamation Seeding

BEST GRAPHICS COOP PRINTERS / FARMLAND
1-888-869-6334

52425 E

REORDER #BG 37579 12/02

BASIN CO-OP

P.O. BOX 2990
DURANGO, COLORADO 81302-2990
(970) 247-3066
www.basincoop.com

CUSTOMER Ecosphere Environmental

ATTN: Karen

DATE	PHONE WHEN READY	WILL CALL	DELIVER	DATE PROMISED
2/15/11	☐ NO.			/ /

ARTICLE	MAKE	MODEL	SERIAL NO.

115 T	Pelletized Lime @ 250.00/ton	28,750	00
8 8 T	22-34-0 @ 900.00/ton	7920	00

REMARKS Quote good For 10 day
All Product Prices subject
Freight From Basin Coop, Durango

MATERIAL	
TAX	
LABOR	
TERMS NET CASH	TOTAL 36,532 00

ESTIMATES ARE FOR LABOR ONLY, MATERIAL ADDITIONAL. WE WILL NOT BE RESPONSIBLE FOR LOSS, OR DAMAGE CAUSED BY FIRE, THEFT, TESTING OR ANY OTHER CAUSES BEYOND OUR CONTROL.

AUTHORIZED BY Jon L Campbell

Feb 15 11 12:52p Basin Coop 9703852477 p.1

BASIN COOP INC.
P.O. BOX 2990
DURANGO, CO 81301
(970) 247-3066

File Copy
February 14, 2011

NEW HORIZON

Quote Number: 021411 - 101512

Price : 78.64 $/Acre (estimate)
Acres : 10.0 Acres
Rate : 174.7 Lbs/Acre

Lbs/Acre Requested	Actual	(22-34-0) Guaranteed Analysis	
40.0	40.0	Total Nitrogen (N).....	22.89 %
--	12.7	7.26 % Ammoniacal Nitrogen	
--	27.3	15.62 % Urea Nitrogen	
60.0	60.0	Available Phosphate (P2O5).....	34.34 %

Source of nutrients: Urea, Monoammonium Phosphate

Material System is Dry Mixing
Density = 56.22 Lb./(Cu. Ft.)

22-34-0

Material Name	Percent	Units/Batch	Scale (Lbs)	Actual
46-0-0.....	33.97	595 Lbs	590	
11-52-0.....	66.03	1,156 Lbs	1,750	

1 Batch

Control #: 0292311

Description	Code	Quantity		Unit Price	Item Total
UREA (46-0-0)	I460000	0.297	Ton	722.86	214.69
11-52-0	I115200	0.578	Ton	991.14	572.88
Mixed fertilizer		0.875	Ton	900.00	787.50
Total					787.50

Appendix G
Reclamation Cost Estimate

MENEFEE MINING CORPORATION - BLACK SPRING HUMATE MINE

Cost Estimate for Reclamation Activities for BLM Bond

Project Size: 3.25 Acres

Item	*Rate Required per Acre*	*Units*	**Amt. Needed for 3.25 Acres**	**Units**	**Unit Cost[0]**	**TOTAL**	**Rate Notes[1]**
Light Equipment Mobilization/Demobilization[2]	--	Unit Cost	4.00	Weeks[7]	$171.00	$684.00	SWA: 22' trailer rental, $171/week when rented with tractor
Light Equipment Mobilization/Demobilization Mileage	--	Unit Cost	300.00	Miles	$0.55	$165.00	RT Mileage to/from Southwest Ag. Inc., in Gem Village, CO.
Heavy Equipment Mobilization/Demobilization[3]	--	Unit Cost	1.00	Delivery Unit Cost (Delivery & Pick Up)	$2,896.00	$2,896.00	WR: $450 delivery & $450pick up charge for Dozer WRD: $ 998 delivery & $998 pick up charge for Loader
Bulldozer	4	Days/Acre	1.00	Month[7]	$5,582.00	$5,582.00	WR: CAT D6; $5,582/month, incl. tax
Front End Loader	3	Days/Acre	1.00	Month[7]	$12,337.00	$12,337.00	WRD: CAT 972; $12,337/month, incl tax.
Water Truck[4]	6.5	Days/Acre	1.00	Month[7]	$3,095.00	$3,095.00	WR: 2,000 gal. truck at $3,095/month, incl. tax
Farm Tractor (50 hp)	3.5	Days/Acre	14.00	Days[7]	$182.00	$2,548.00	SWA: $182/day
Fertilizer/Soil Amendment (N / P)	174.7	Lbs/Acre	567.78	Lbs	$0.45	$255.94	BC: Shipping not included; assumes pickup from Basin Co-op in Durango; tax not incl.
Lime	11.5	Tons/Acre	37.38	Tons	$310.00	$11,586.25	BC: Rate includes freight/shipping from Kansas to site
Proprietary Seed Mix- Drill Seeding Rates	10.5	Lbs/Acre	34.13	Lbs	$5.09	$173.70	SWS
6 ft. 3-point Tandem Disk implement	0.75	Days/Acre	5.00	Days[7]	$85.50	$427.50	SWA: $85.50/day when rented with tractor
8 ft. Pasture/blanket harrow	0.75	Days/Acre	5.00	Days[7]	$26.75	$133.75	SWA: $26.75/day when rented with tractor
Drill Seeder	0.5	Days/Acre	4.00	Days[7]	$160.00	$640.00	SWA: $160/day
Mulch	0.5	Tons/Acre	1.63	Tons	$139.00	$225.88	SWA: $139/ton
Skid-mounted Straw Blower (18 hp)	0.25	Days/Acre	3.00	Days[7]	$107.00	$321.00	SWA: $107/day, can be skid-mounted in pickup
3-point Straw Crimper	0.25	Days/Acre	3.00	Days[7]	$53.50	$160.50	SWA: $53.50/day when rented with tractor
Reclamation Labor Cost (assumes $12/hour rate, and 2 employees)[5]	6.5	Days/Acre	42.250	Days	$96.00	$4,056.00	
Mob./Demob. Labor Cost (assumes $12/hour rate and 2 employees)[6]	--	Unit Cost	11.00	Days	$96.00	$1,056.00	
TOTAL						**$46,343.51**	
Total per Acre						**$14,259.54**	

[0] Cost includes taxes unless otherwise noted

*[1] Rates provided by the following companies: **BC** =Basin Co-op in Durango, CO. **SWA** =South West Ag, Inc. in Gem Village, CO. **SWS** =Southwest Seed in Dolores, CO. **WR** =Wagner Rents in Flora Vista, NM. **WRD** =Wagner Rents in Durango, CO.*

[2] Cost of Transportation of Light Equipment to/from site for tractor and various implements using a 22' rental trailer pulled by a 3/4 ton pickup truck; assumes employee truck used.

[3] Cost of Transportation of Heavy Equipment to/from site for front-end loader and bulldozer; Wagner Rents labor cost is included in fee

[4] Assumes CDL-licensed driver on reclamation staff available to drive truck for delivery to site, and return to dealer at close of project. Otherwise delivery and pickup of truck will cost $450 each.

[5] Assumes a total of 21.125 days for site reclamation work on a 3.25 acre site, and 8-hour workdays

[6] Assumes 1 employee 1 day each for: fertilizer/seed/straw pick up in Durango, pick up light equipment rental in Gem Village, return light equipment rental in Gem Village, unload/mobilization on-site, and load/demobilization on-site. Assumes 1 employee 1/2 day each for: pick up water truck from Flora Vista, return water truck to Flora Vista

[7] Includes Rental cost for both days of reclamation work and transportation days

MENEFEE MINING CORPORATION - BLACK SPRING HUMATE MINE

Time Estimate for Reclamation Activities for BLM Bond

Project Size: 3.25 Acres

RECLAMATION EQUIPMENT & LABOR			
Action	**Days/Acre**	**Days/3.25 Acres**	**Equipment Needed**
Place Backfill	1.5	4.875	loader, dozer
Grade and Compact Subgrade	1	3.25	dozer
Place Topsoil	1.5	4.875	loader, dozer
Add Amendments & Disk & Harrow	1.5	4.875	tractor, disk, harrow
Seeding	0.5	1.625	tractor, drill seeder
Apply Mulch	0.25	0.8125	blower
Crimp Mulch	0.25	0.8125	tractor, crimper
TOTAL DAYS:	**6.5**	**21.125**	

MOBILIZATION / DEMOBILIZATION LABOR	
Action	**Days (8 hrs/day)**
pickup fertilizer / straw /seed in Durango (assume seed shipped to location in DGO)	0.5
pickup/return light equipment in Gem Village	2
pickup/return water truck in Flora Vista	1
unload/mob on site	1
load/demob on site	1
TOTAL DAYS:	**5.5**