

**Formal Biological Assessment for Desert Tortoise at the
Lynx Cat Mountain Mine near the Community of Hinkley,
San Bernardino County, California**

U.S. Geological Survey 7.5' Hinkley quadrangle:
Private parcel: Township 10 North, Range 4 West, southeast ¼ Section 1, SBB&M
BLM parcel: Township 10 North, Range 3 West, southwest ¼ Section 6

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Figure 1. Vicinity Map with Proposed Access Road and Mine Site

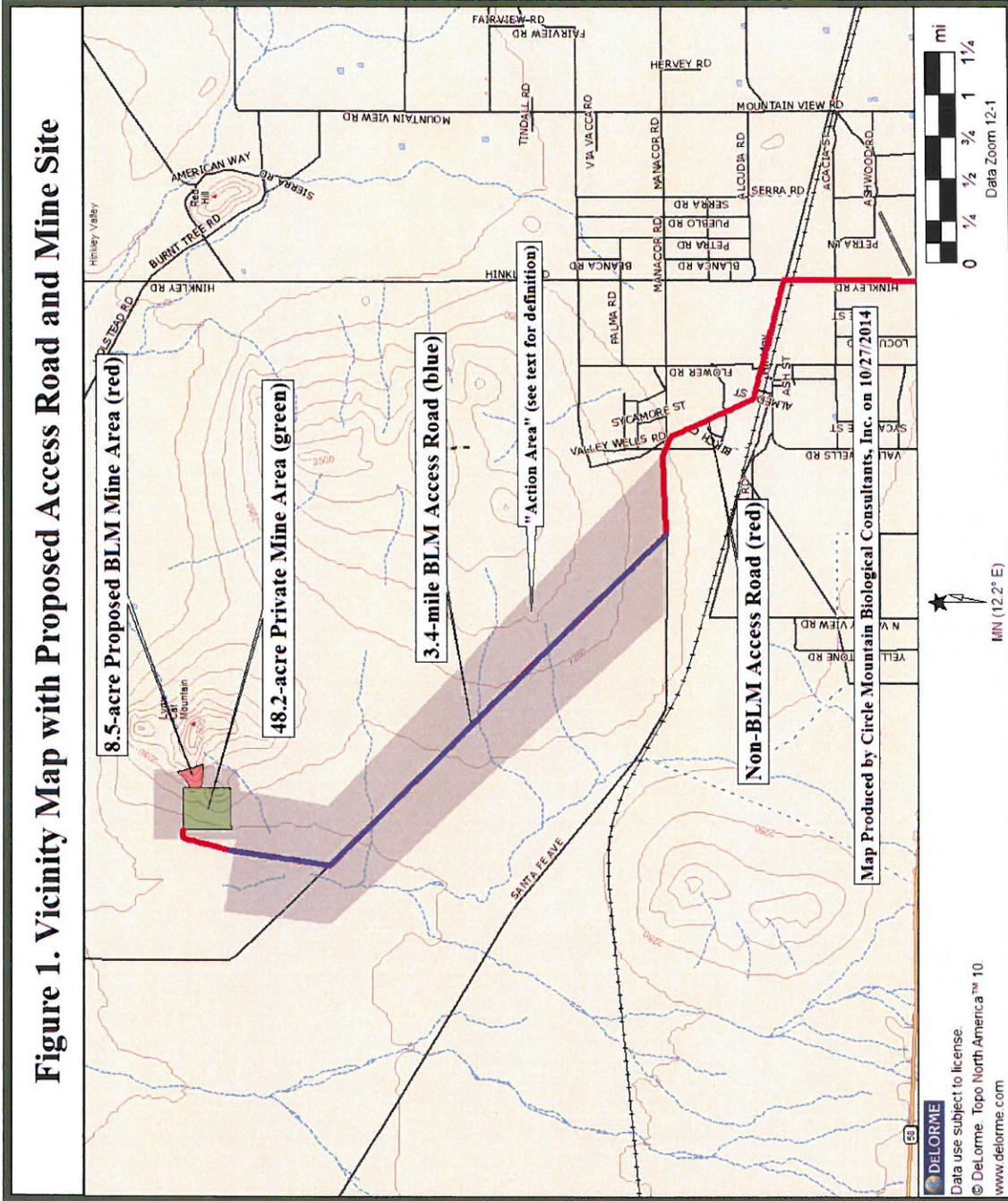


Figure 2. Locations of Proposed Mine Site and Survey Areas

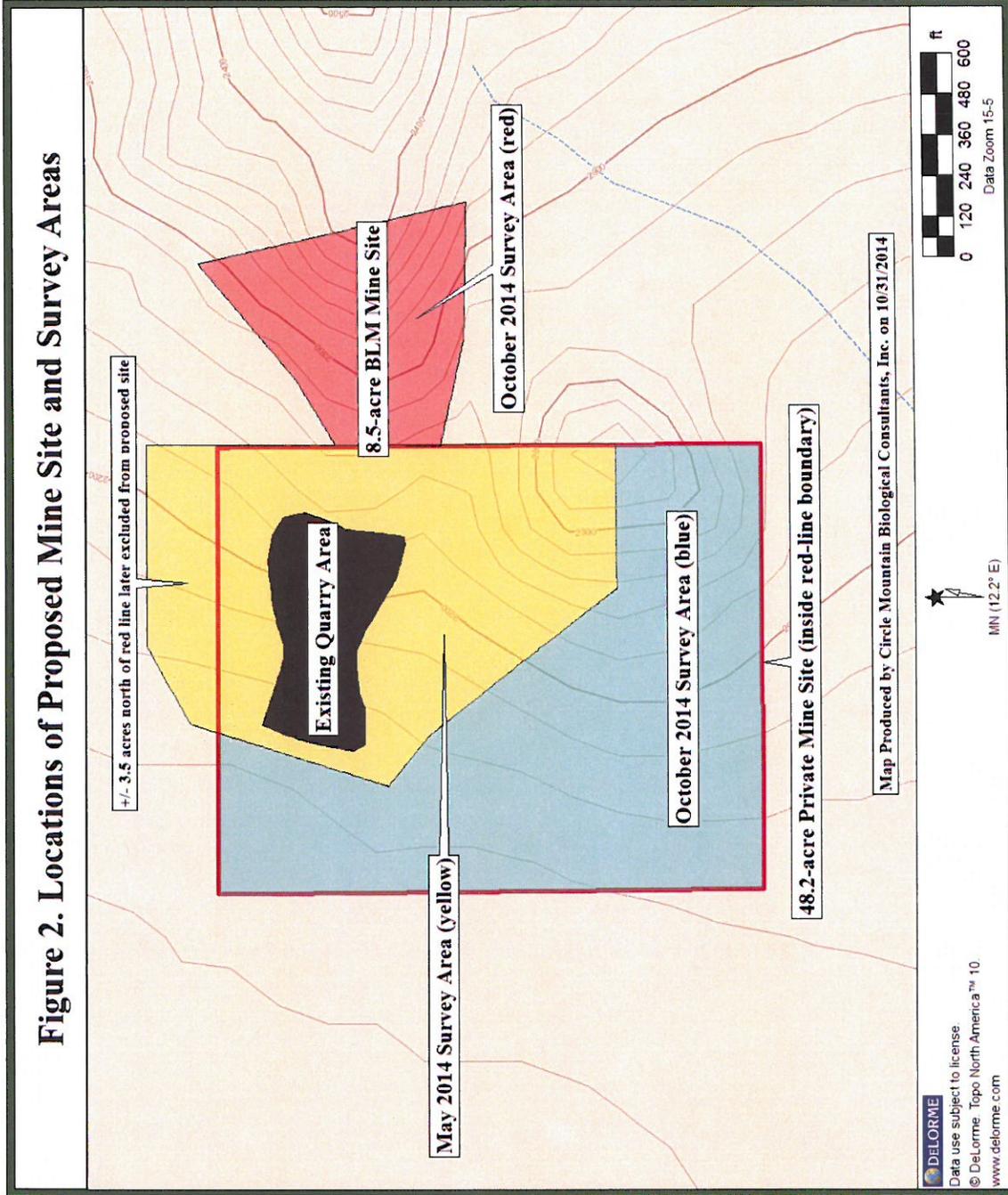


Figure 3. Private and BLM Mine Sites with Transects and Tortoise Sign

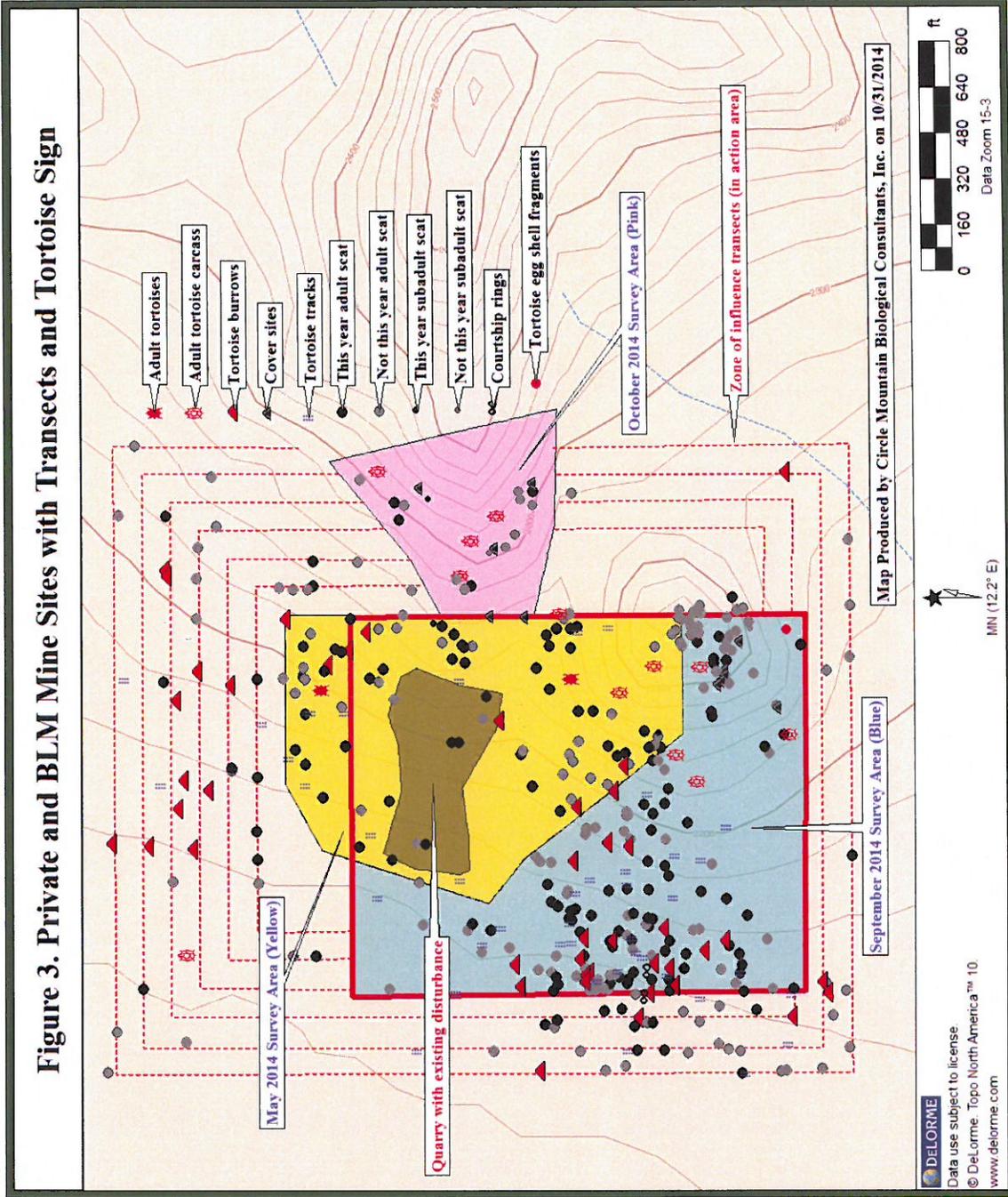
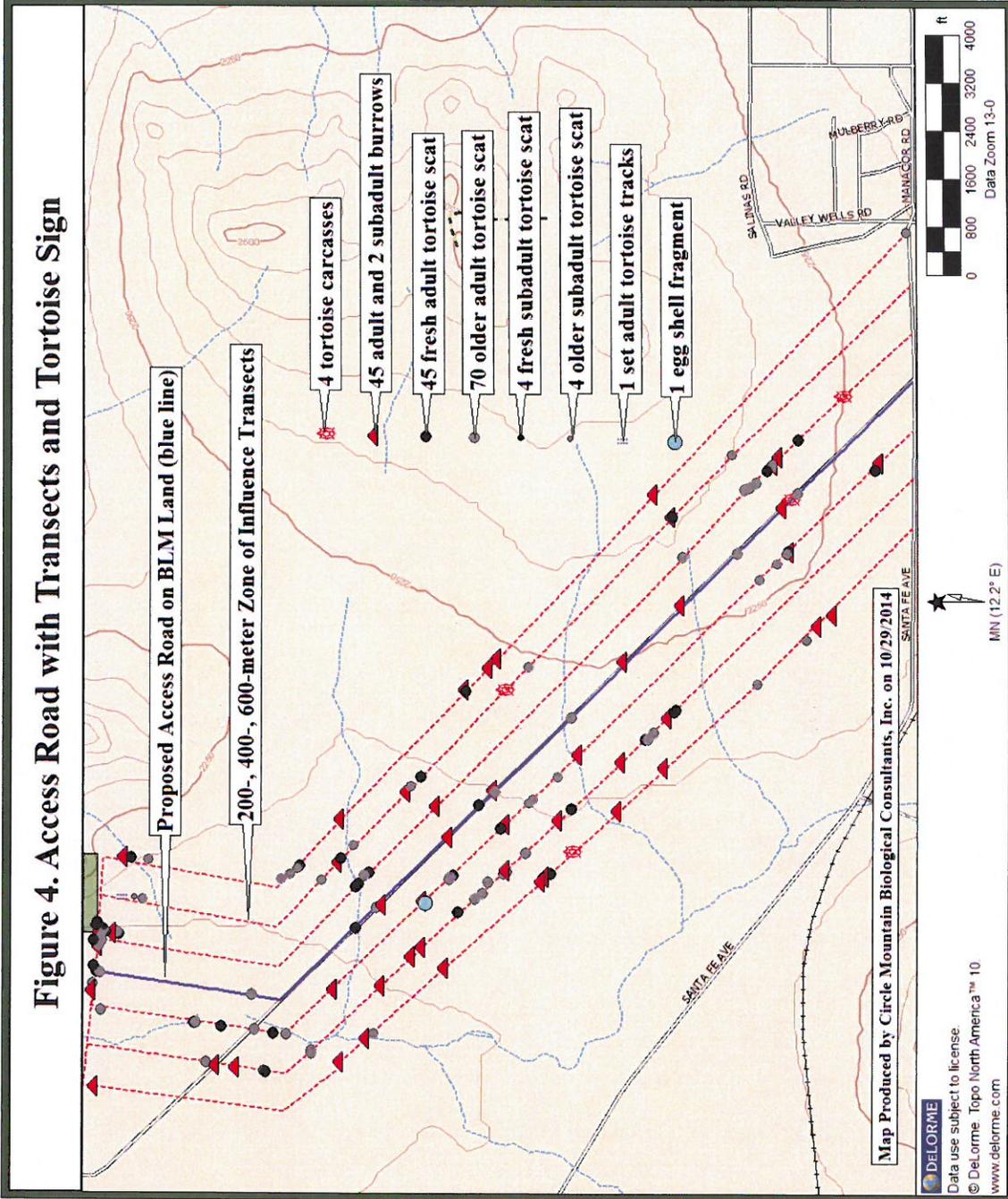
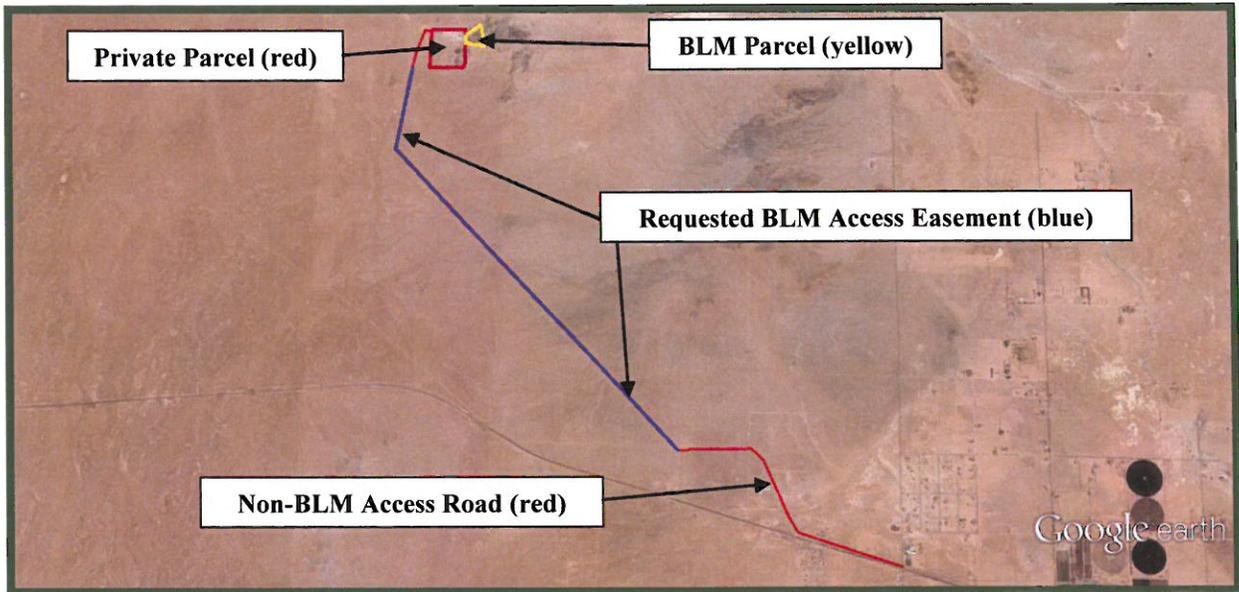


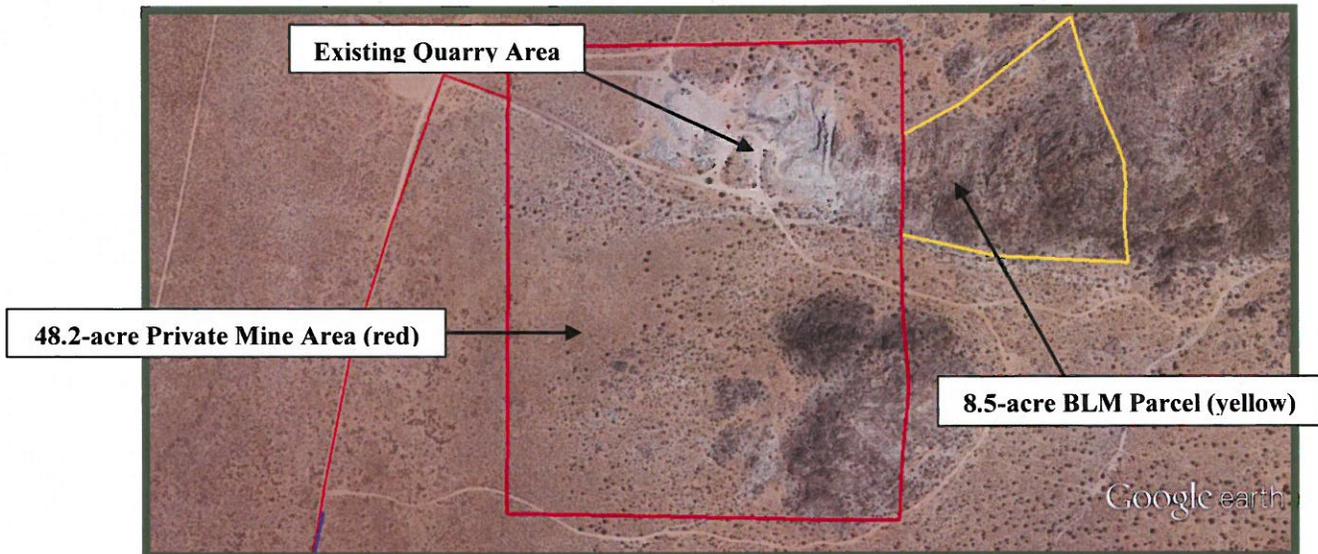
Figure 4. Access Road with Transects and Tortoise Sign



**Figure 5. Proposed Private and BLM Mine Sites with Access Road:
Aerial Photograph, ©2014 Google™ Earth**



View of existing access roads and proposed mine site.



Enlarged view of private and BLM parcels.

Executive Summary

Circle Mountain Biological Consultants, Inc. was contacted by Matcon Corporation, Inc. to perform focused surveys and draft a formal biological assessment for Agassiz's desert tortoise on a proposed 56.7-acre mine site and 3.4-mile± access road located in San Bernardino County, California. The mine sites include a 48.2-acre parcel inclusive of the existing Lynx Cat Mountain Mine (California Mine I.D. CA#91-36-0049) and an 8.5-acre parcel to the east that is on public lands managed by the Bureau of Land Management. The 3.4-mile± access road is located between the existing mine and Santa Fe Avenue, which includes Water Valley Road and an unnamed road accessing the site. The proposed action is to reactivate and expand the existing mine and obtain right-of-way permission to use the proposed access road, which bisects public lands.

There have been four distinct surveys performed, including 4 May 2014 when level portions of the 25 acres on the northern and eastern portions of the private parcel were surveyed; 30 September 2014 when the level portions of the 25 acres comprising the western and southern portions of the private parcel were surveyed; 28 October 2014 when the access road and adjacent areas were surveyed; and 30 October 2014 when the rocky, eastern portions of the private parcel and the entire 8.5-acre BLM parcel were surveyed.

Based on DeLorme Topo North America® 10.0 software, elevations on the private property range from approximately 718 meters (2,356 feet) near the southeast corner down to 648 meters (2,125 feet) near the northwest corner. The west boundary of the BLM parcel is at 689 meters (2,260 feet) gradually ascending up to an elevation of 736 meters (2,415 feet). Elevations along the proposed access road range from 648 meters (2,125 feet) at the north end up to 676 meters (2,217 feet) at the south end where it intersects Santa Fe Avenue.

On the private parcel, terrain is gently to moderately sloping on most of the site, except for within the existing quarry area, where there are nearly vertical cliffs, and on the steep, rocky slopes of Lynx Cat Mountain to the east and southeast. Soils range from very sandy on the alluvial fans on the western parts of the site to extremely rocky and boulder-strewn to the east and southeast. No USGS-designated blue line streams occur on the site, although a small wash drains from east to west near the southeast corner of the private parcel. The BLM parcel occurs on the lower, mountainous slopes of Lynx Cat Mountain and has massive boulder outcrops throughout. The access road runs through relatively flat terrain, mostly sandy, with some rocky areas on the slight rises near the middle.

The 66 plant species identified during the surveys are listed in Appendix A. The plant communities found on the private parcel are a blend of white bursage series and allscale series on the flats to the west, and white bursage series and creosote bush series on slightly higher elevations to the east, and are the same along the access road, with creosote bush dominant to the southeast. The 9 reptile, 19 bird, and 9 mammal species identified during the surveys are listed in Appendix B.

Tortoise sign found onsite and in adjacent areas is summarized in the following table:

Tortoise Sign Found During Four Surveys										
Site	Animals	Carcasses	Tortoise Scat				Burrows		Other*	
			Fresh Adult	Older Adult	Fresh Subadult	Older Subadult	Dirt	Rock Shelter	Tracks	Egg Shell
On Private Site	1	5	140	140	8	7	24	6	30	1
On BLM Site	-	4	4	14	1	1	-	3	-	-
Off Private Site	1	1	35	40	2	1	20	-	5	-
On Access Road	-	1	3	7	-	-	6	-	-	-
Off Access Road	-	3	45	64	4	24	41**	-	1	1
Totals	2	14	227	265	15	33	91	9	36	2

Based on the presence of numerous sign and two adult tortoises, CMBC (2014a) concluded that tortoises occur on both the private and BLM sites, more so in level areas but also in rocky, mountainous areas, and alongside the entire length of the 3.4.-mile± access road. Based on information given in Section 3.2 of their report, they estimated that there may be fewer than 10 tortoises onsite. However, in the interest of avoiding re-consultation under Section 7 between BLM and USFWS should this limit be exceeded, they provided the liberal estimate that between 13 and 22 tortoises may occur and be affected on the 56.7 acres comprising the private and public sites.

A formal application has been completed for incidental take of the tortoise to be authorized under Section 2081 of the California Fish and Game Code. The application identifies 73 minimization and mitigation measures that are not reiterated herein. Temporally, these measures would be implemented before, during, and after mining operations. In general, they provide for worker education; minimizing impacts by delineating construction areas and restricting impacts to those areas; biological monitoring; habitat compensation; and other typical measures identified in a recent 2081 permit. Additionally, the Proponent herein identifies a set of protective measures to be adopted by the USFWS in its biological opinion and by the BLM in its grant stipulations that would further minimize and mitigate impacts to the desert tortoise.

Conclusions

For the desert tortoise, BLM concludes the following with regards to the reactivation and expansion of the existing 5.5-acre Lynx Cat Mountain Mine site:

- (1) Given the presence of tortoise sign throughout the mine site areas and alongside the intended access road, BLM has determined that the project *may affect* federally-designated, threatened desert tortoise.
- (2) Conducting pre-ground disturbance surveys, delineating and fencing mining areas, administering tortoise awareness programs, employing an authorized biologist to monitor initial ground disturbing activities, restricting speed limits along the access road, and implementing anti-predator measures for ravens and coyotes, among others, are specific measures recommended to effectively avoid or minimize impacts to tortoises occurring at the mine site and along the access road.
- (3) Given BLM's *may affect* determination, formal section 7 consultation will be required between USFWS and BLM and a project-specific biological opinion will be issued for the project. Protective minimization measures and off-site mitigation measures are identified herein and will be incorporated in the biological opinion issued by USFWS to BLM.

Table of Contents

Figure 1. Vicinity Map with Proposed Access Road and Mine Site	i
Figure 2. Locations of Proposed Mine Site and Survey Areas	ii
Figure 3. Private and BLM Mine Sites with Transects and Tortoise Sign.....	iii
Figure 4. Access Road with Transects and Tortoise Sign.....	iv
Figure 5. Proposed Private and BLM Mine Sites with Access Road (aerial)	v
Executive Summary	vi
1.0. Introduction.....	
1.1. Purpose and Need for Study	
1.2. Summary of Desert Tortoise Occurrence in the Region.....	
2.0. Proposed Action.....	
2.1. Proposed Action.....	
2.2. Project Description.....	
2.3. Current Management	
3.0. Affected Environment.....	
3.1. Biological Resources	
3.2. Hydrology	
3.3. Minerals	
3.5. Soils and Topography	
4.0. Environmental Consequences.....	
4.1. Impacts to the Desert Tortoise	
4.2. Conservation of the Desert Tortoise	
5.0. Proposed Mitigation Measures	
5.1. Mitigation for the Desert Tortoise	
6.0. Residual Effects	
7.0. Cumulative Effects.....	
8.0. Conclusions.....	
9.0. References.....	
Appendix A. Plant Species Detected	
Appendix B. Animal Species Detected.....	
Appendix C. Field data sheets completed for four 2014 surveys	
Appendix D. Photographic Exhibits (see Figure 6 for Exhibit locations)	

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1.0. Introduction

1.1. Purpose and Need for Study

Circle Mountain Biological Consultants, Inc. (CMBC) was contacted by Matcon Corporation, Inc. (Proponent) to perform focused surveys for Agassiz's desert tortoise (*Gopherus agassizii*) on a proposed 56.7-acre (herein "57 acres±") mine site and 3.4-mile± access road located in San Bernardino County, California (see Figures 1 and 2). The mine sites include a 48.2-acre (herein "48 acres±") parcel inclusive of the existing Lynx Cat Mountain Mine (California Mine I.D. CA#91-36-0049) and an 8.5-acre parcel to the east that is on public lands managed by the Bureau of Land Management (BLM). The 3.4-mile± access road is located between the existing mine and Santa Fe Avenue, which includes Water Valley Road and an unnamed road accessing the site (Figures 1, 4, and 5).

Given the location of the sites in an unincorporated portion of the county, this report has been prepared, in part, according to County of San Bernardino's *Report Protocol for Biological Assessment Reports* (County of San Bernardino 2006). Additionally, since the proposed, existing access road is located on public lands managed by the BLM, this report provides pertinent information identified in *Desert Tortoise and the Bureau of Land Management: A Biological Consultant's Guide* (BLM 2007). Finally, since tortoises and their sign were found within the study area, this report is intended to serve as a formal Biological Assessment.

According to Section 7(4)(c) of the Federal Endangered Species Act (FESA), if "...any species which is listed or proposed to be listed may be present in the area of such proposed action...[the] agency shall conduct a biological assessment for the purpose of identifying any endangered species or threatened species which is likely to be affected by such action" (USFWS 1988). Completion of this Biological Assessment is considered prudent to ensure that BLM and U.S. Fish and Wildlife Service (USFWS) have a sufficient level of detail available to fully consider impacts.

The primary objectives of this Biological Assessment are to provide BLM with descriptions of the Proposed Action, Affected Environment, Environmental Consequences, Proposed Mitigation, Residual Effects, Cumulative Effects, and Conclusions as outlined in BLM (2007). Using this and other information, BLM has determined the level of effect to the desert tortoise and other protected biological resources, and as the National Environmental Policy Act (NEPA) Lead Agency, will ensure that the project conforms to applicable federal laws and regulations. The information will also be useful to federal and state regulatory agencies, including USFWS and California Department of Fish and Wildlife (CDFW), respectively, when BLM cooperates with them to assess impacts associated with proposed mining.

1.2. Summary of Desert Tortoise Occurrence in the Region

Both USFWS and California Fish and Game Commission have listed the desert tortoise as a threatened species under the Federal Endangered Species Act (FESA) and California Endangered Species Act (CESA), respectively. Detailed information for the desert tortoise on the project site is given in the “Affected Environment” portion of this Biological Assessment.

In a recent biological opinion issued to Caltrans, USFWS (2013) provides the following discussion with regards to regional occurrence and trends of desert tortoises throughout its listed range: “On an annual basis, the [USFWS] produces a report that provides an up-to-date summary of the factors that were responsible for the listing of the species, describes other threats of which we are aware, describes the current population trend of the species, and includes comments of the year’s findings. The [USFWS’] (2011) recovery data call report describes the desert tortoise’s status as ‘declining,’ and notes that ‘(a)nnual range-wide monitoring continues, but the life history of the desert tortoise makes it impossible to detect annual population increases (continued monitoring will provide estimates of moderate- to long-term population trends). Data from the monitoring program do not indicate that numbers of desert tortoises have increased since 2001. The fact that most threats appear to be continuing at generally the same levels suggests that populations are still in decline. Information remains unavailable on whether mitigation of particular threats has been successful.’”

1.2.1. Listed Species. State listing is pursuant to §2074.2 and §2075.5 (California Endangered Species Act of 1984) of the Fish and Game Code, relating to listing of Endangered, Threatened, and Rare species of animals. Federal listing is pursuant to the Federal Endangered Species Act of 1973, as amended.

<u>Common and Scientific Names</u>	<u>Status Designations and Occurrence</u>
Agassiz’s Desert Tortoise (<i>Gopherus agassizii</i>)	Federally & state threatened Present

2.0. Proposed Action

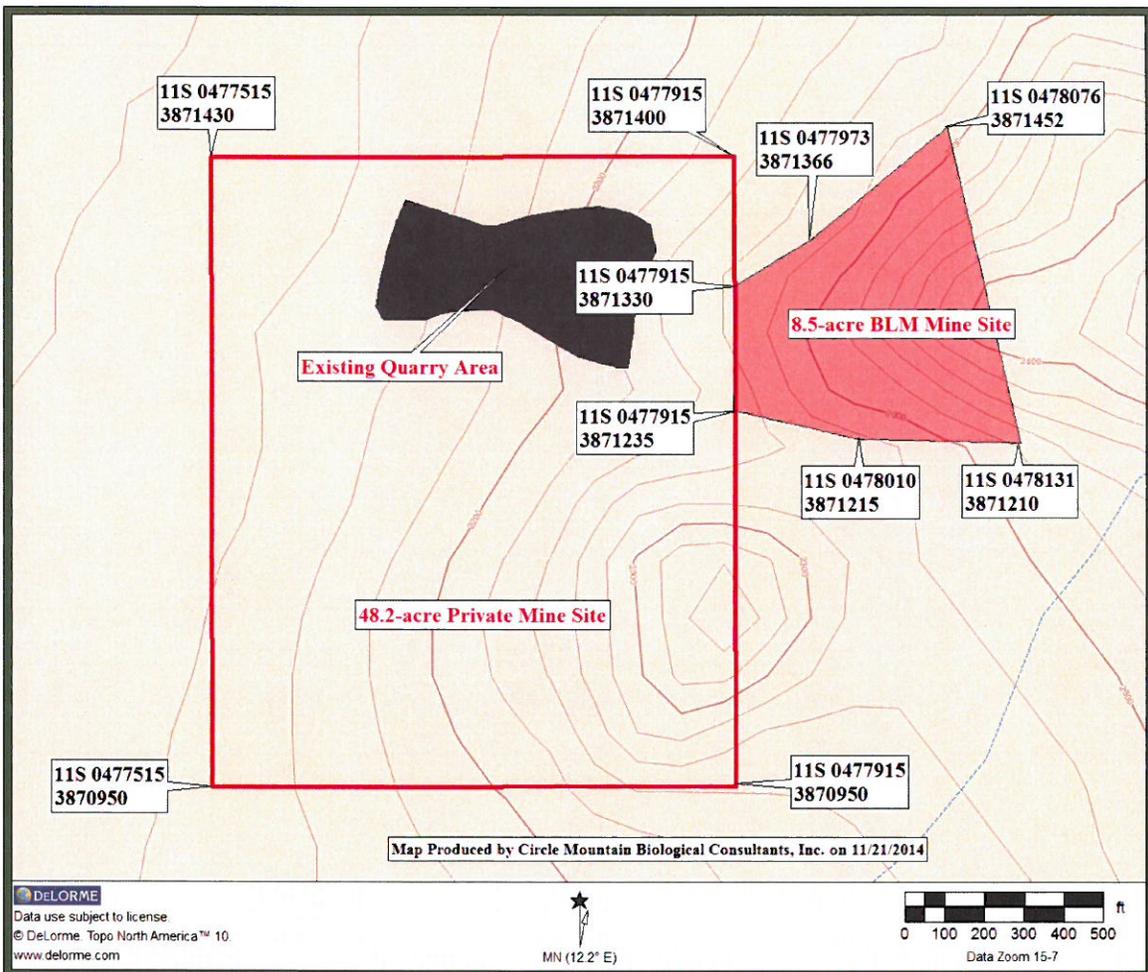
2.1. Proposed Action

The proposed action is to reactivate and expand the existing mine, referred to as Lynx Cat Mountain Mine. The proposed mine sites include a 48.2-acre parcel inclusive of the existing 5.5-acre± open pit (California Mine I.D. CA#91-36-0049) and an 8.5-acre parcel to the east that is on public lands managed by the BLM, for a total of 56.7 acres (herein “57 acres±”). The proposed action also pertains to a 3.4-mile± access road, between the existing mine and Santa Fe Avenue, portions of which are shown as Water Valley Road on various maps. In general, the mine would be reactivated and expanded, in part, to extract sand and gravel in support of the nearby construction and realignment of Highway 58 between the unincorporated community of Hinkley and Barstow, among other uses (see Webber and Webber Mining Consultants, Inc. 2014a).

As part of the proposed action, BLM would issue right of way grants and other pertinent authorizations to allow the Proponent to extract materials from the 8.5-acre parcel of public land and to use the access road to haul those materials from the site. CDFW would issue a 2081 incidental take permit authorizing incidental take of the state-threatened desert tortoise. And, USFWS would consult with BLM and issue a biological opinion authorizing take of the federally-threatened desert tortoise.

2.2. Project Description

There are three specific areas that would be affected by implementing the proposed action: (1) 48.2-acre private parcel (part of an 81.69-acre parcel) owned by the Proponent, which includes the 25-acre vested mine site and the existing open pit quarry; (2) 8.5-acre parcel of public land administered by the BLM; and (3) 3.4-mile existing access roads between Santa Fe Avenue and the mine site. In addition to the maps included above, the following map is provided showing NAD 83 UTM coordinate corner points to clearly identify the mine-site components of the proposed action. As existing routes, Water Valley Road and the 0.5-mile unnamed road that enters the site from the south are clearly identified on the aerial in Figure 5 and on various maps, so coordinates are not provided.



The following information is taken from Webber and Webber Mining Consultants, Inc. (2014a), which provides additional information and is incorporated by reference. The Lynx Cat Mountain Mine is an existing vested mine operation under the authority of Reclamation Plan 90M-010, as approved by San Bernardino County on June 28, 1990. The mine is designated by the State of California as CA Mine ID# 90-36-0049. The existing mine site consists of a 25-acre project and holds vested status with the County of San Bernardino. A portion of the existing site has been periodically mined since 1963, resulting in approximately 5.5 acres of pre-Surface Mine and Reclamation Act (SMARA) disturbance. Mined products include unusually high quality railroad ballast grade rock as well as quality, Caltrans grade construction aggregate for use in concrete, asphalt, and general Green Book specification construction aggregates.

The updated and revised Lynx Cat Mountain Mine Conditional Use Permit and Reclamation Plan proposes to increase the area of the mine from 25 acres to approximately 48.2 acres; to increase the depth of the mining and quarry areas; to increase maximum annual production from 3,000 tons per year to up to 400,000 tons per year; and, to add the authority to install and operate an asphalt batch plant at the site on an as needed basis. This plan also proposes to extend the expiration date of the permit to 45 years from the date of approval (40 years of excavations, five years of reclamation monitoring).

The revised and expanded Mining Plan (Webber and Webber Mining Consultants, Inc. 2014b) proposes to continue mining the original quarry area and to extend operations southward and west into the proposed expansion area. The actual disturbance areas and depths of mining activities are shown in detail on both Mining and Reclamation Plan Maps (Figures 8 and 9 in BLM 2014). The revised Mining Plan proposes a maximum production of up to 400,000 tons of excavated material per year throughout the planned 40-year duration of mining operations. Therefore, the estimated material reserves planned for extraction over the life of the project will be up to 16 million tons. Production levels will be dictated by construction market demand. Given the tonnage reserves available, various current market variables, and five years of revegetation monitoring, a 45-year permit is proposed.

The plan also proposes the authorization to install and operate a hot mix asphalt batch plant onsite to meet local demand for asphalt projects, particularly highway construction and maintenance projects. Operation of the asphalt plant is expected to be intermittent, but having the authority will greatly increase the flexibility of the Lynx Cat Mountain Mine to meet local area construction demands. During operation, the asphalt plant may utilize up to 160,000 tons of mined aggregates annually. The plant will be located near the mine site entrance, but may be relocated anywhere onsite to increase production efficiency.

Basic open pit, hillside quarrying methods will continue to be used at this site that includes drilling and blasting to extract mined granite material. Initially, the mine will operate continuously to support upcoming Highway 58 projects; however during periods of reduced demand, the mine will operate on an intermittent basis. Generally, all

processing equipment will be mobilized to the mine, as needed, to meet market demand. Orders will be processed and removed as soon as the orders are filled and the product stockpiles are depleted. During any period of non-operation or limited operations for a period of 12 months or greater, the operator (or his representative) will prepare and submit an Interim Management Plan to San Bernardino County and the State Office of Mine Reclamation. During extended periods of non-operation the operator will also conduct regular inspections of the entire mine site to insure that all gates are locked, berms have not been disturbed and that the site is generally secured during these periods of non-operation. The phasing of mining activities may be conducted, based upon the operational needs of the mine and to fill specific material orders.

Prior to excavations of the granite aggregate material, the top 6-12 inches of overburden topsoil material, including any vegetation, will be removed and placed along the perimeter of the quarry in growth media test bed berms for use during reclamation activities. Actual aggregate mining will then be accomplished either by drilling/blasting or by Caterpillar D-10-size dozer (or equivalent), pushing rock material into stockpiles for subsequent loading with a Caterpillar 988 front loader into the processing plant. A portable crushing and screening rock plant will be located as near as practical to the working face of the quarry to minimize equipment movement/dust emissions.

Blasting of the rock material will occur in areas of the mine that possess the harder rock, which cannot be ripped by dozers. Standard drill and blast techniques will be utilized to accomplish ore extraction. Blasted rock will then be loaded directly into the processing plant by wheel loader. In portions of the proposed mine operation that contain the hardest rock, benching will occur. Bench parameters will be 40 feet high with 15-foot wide benches and 0.5:1 (horizontal: vertical) faces, for an overall slope of approximately 50 degrees. Bench excavations will adhere to standard hillside mining techniques and will comply with Mine Safety and Health Administration (MSHA) requirements. In the remainder of the site, sloping of project areas will be graded to no steeper than 2:1 (horizontal: vertical).

Generally, the project will operate up to five days per week, 12 months per year and up to 24 hours per day, to accommodate construction project schedules. The volume of truck traffic will depend on type and duration of various construction market activities. At the maximum annual production rate of 400,000 tons per year, up to 65 truck trips per day could occur for haulage of material. A more typical level of truck volume during average production will be 20-40 truck trips per day. There may be periods of no onsite activity given that this mine will operate on an intermittent basis as dictated by market demands. The typical number of mine personnel and others onsite during active excavations is expected to be 5-7 persons.

Mining activities at the Lynx Cat Mountain Mine would produce three types of waste: overburden (topsoil), waste oils/solvents, and domestic garbage. Overburden on the project site primarily consists of seed-containing topsoil and rubble and generally comprises the top 12 inches of surface material. The existence of this overburden material is not consistent throughout the site, especially in the hard rock-exposed areas. This

material will be removed from the surface where it exists, and stockpiled in test bed islands or berms along the perimeter of the quarry for subsequent use during revegetation. The total quantity of overburden/topsoil material is expected to be low.

Equipment and vehicle maintenance servicing may produce waste oils, lubricants and solvents. It is projected that maintenance of processing equipment will generally occur offsite, but during periods of maximum production it may take place onsite. When onsite maintenance does occur, all servicing of equipment will be performed consistent with San Bernardino County Department of Environmental Health Services regulations for draining/collecting waste oils and other hazardous materials. All collected waste oils, lubricants and solvents shall be placed in covered containers and stored within secondary containment structures while onsite. These collected materials will continue to be transferred to a County-approved hazardous waste handler for proper disposal or to an approved re-use facility. Ordinary refuse will continue to be collected in bins and disposed of at permitted landfills.

No other chemicals or hazardous materials are planned to be used onsite during normal operations at the project site. No flotation, amalgamation, smelting, leaching, or other processes are proposed throughout the life of the project.

Where the granite material is less competent, it can be extracted primarily by a bulldozer that rips the rock and pushes the material towards the crushing/screening plant. Alternatively, drill and blast methods will be used to extract the granite rock material. Once extracted from the mine, the rock will continue to be crushed and processed utilizing a semi-portable crushing and screening plant. Material will be fed into the wet-process plant using a rubber tired front end loader. A series of screens, crushers, and conveyors will comprise the various processing circuits that will produce a variety of aggregate products, depending on the construction project requirements. The processing plant can be expanded or re-configured in the future to increase efficiency or produce specific construction project products.

Occasionally, a construction project may require the installation and operation of an asphalt batch plant onsite. A portable asphalt batch plant will be used in these cases and will consist of an aggregate feeder, conveyor belts, hot mixing drum, and an asphalt truck load-out silo. The required rock aggregates will be placed into the aggregate feeder, which are then conveyed to the mixing drum feeder. The material is then fed into the hot mix drum and blended with asphalt oil, producing the asphalt product that is then conveyed to the truck load-out silo. Asphalt oil and fuel will be provided to the plant from stationary aboveground tanks that are located within bermed containment areas as a precaution against any tank rupture. No flotation, amalgamation, smelting, leaching, or other processes are proposed at this site throughout the life of the project.

The only significant use of fresh water at the project site is for dust suppression activities on haul roads and processing plant equipment when required. At average production levels near 200,000 tons per year, an estimated 4,000 gallons of water per day may be required for dust suppression activities. Maximum mineral production of 400,000 tons

per year will result in maximum water usage of approximately 8,000 gallons of water per day, or approximately 6.1 acre-feet per year. Initially, all water to be used for project operations will be imported and provided via private vendors from off-site sources. At some point in the future, an onsite water well may be established to provide fresh water for project operations. Recycling of water is impractical and not proposed since all water will be consumed directly by the material processing and dust control activities. Bottled water will be provided for employee consumption.

Past mining activities at the Lynx Cat Mountain Mine have shown that there is no excess water produced by project activities. Storm runoff water will continue to be directed into the onsite containment area within the mine excavations where it either evaporates or percolates back to the water table. No contaminants such as processing chemicals, detergents, acid drainage, fuel oil, or gasoline will be exposed to water flows onsite throughout the life of the project. No septic systems are, or will be, installed on-site.

The Lynx Cat Mountain Mine has been designed to provide for complete retention of any onsite water flows. As the quarry expansion progresses, retention area(s) will be maintained to prevent water from discharging to offsite areas. No head ward erosion from the quarry areas is anticipated due to the composition of the generally non-erodible gray granite material. Any erosion sediments will continue to be retained onsite and will not affect offsite properties. Occasional heavy rainfall is the only potential source of erosion and offsite sedimentation, and this occurrence has been anticipated and mitigated by the site grading and construction of a test bed, growth media berm around the perimeter of the quarry that will prevent storm water inflow and will contain all water collected with the active excavation of the quarry floor.

Additionally, all other active project areas will continue to be graded, inspected monthly, and repaired with compacted non-erodible rock materials to prevent erosion during potentially heavy precipitation events. At the end of mining, any water retained within the project boundary will remain until such time that evaporation and percolation have reduced the quantity of standing water onsite. Any accumulated sediments that may be deposited in the project basin area will be removed and stockpiled for use during reclamation activities.

Product stockpiles, mine roads, and active quarry faces will continue to be periodically wetted to reduce potential wind erosion. Any stockpiles or mined materials that may remain inactive for an extended period of time will be covered with coarse aggregate or planted with native vegetation to prevent wind/water erosion. Other potential project areas subject to wind/water erosion will receive the same treatment.

Blasting of rock material is required for extraction activities at the Lynx Cat Mountain Mine and will continue under the proposed revisions. Therefore, it is proposed to continue the use of blasting during future mine expansion activities. All blast related activities will be performed and managed by a licensed blasting contractor. Typically, a track drill will bore a series of 3-4 inch diameter holes vertically into the surface in a predetermined pattern. Explosives will then be loaded into the holes; in this case,

Ammonium Nitrate (ANFO) will most likely be used. The blasting contractor will control access to the blast site during bench round charging as well as during/immediately after the actual detonation. The blast site will always be visually checked for persons in addition to using loud auditory alerts prior to blasting.

No onsite storage of explosives will occur throughout the life of the project. The blasting contractor will be responsible for all handling/storage of explosives. Explosives will only be brought onsite for an active blasting event. Any blasting contractor utilized at the mine site will be licensed by the State of California and possess required explosives handling permits from San Bernardino County and the U.S. Bureau of Alcohol, Tobacco, and Firearms. Additionally, blasting contractors will be required to follow California OSHA and Federal Mine Health and Safety Administration (MHSa) regulations that apply to handling explosives during all activities onsite.

State and federal take authorization for two threatened animal species has been solicited but not granted at the time of this writing (December 2014). Before mining can be resumed and expanded at the quarry, a federal biological opinion would need to be issued by USFWS; CDFW would need to issue a 2081 incidental taker permit for take of desert tortoise; and the BLM will issue various authorizations that will include protective stipulations. Each of these documents, and those issued by the County, will include minimization and mitigation measures for the desert tortoise and other biological resources.

2.3. Current Management

BLM, Geographic Information System (GIS) Expert, Peg Margosian was contacted on 25 November 2014 to determine salient land status for the two sites and access road. She reported that the mine site is located within the Superior-Cronese Desert Wildlife Management Area (DWMA), which was designated as an Area of Critical Environmental Concern (ACEC) with adoption of the West Mojave Plan (BLM 2006). They are also within the Superior-Cronese Critical Habitat Unit designated in 1994 (USFWS 1994). The site is within the Harper Lake Grazing Allotment (for cattle), which was recently retired and is no longer subject to grazing. Finally, the site is within Multiple Use Class Limited (MUC L), the significance of which is described below. This classification applies only to mine activities on the BLM parcel, and is not applicable to the private parcel.

See the Environmental Assessment produced for the proposed action (BLM 2014), which provides more information than that which follows. The California Desert Area Conservation Plan (CDCA Plan; BLM 1980) was amended for this area in 2006 under the *West Mojave Coordinated Management Plan* (West Mojave Plan) (BLM 2006), so that the proposed action is found within this planning area. This federal plan affecting activities on about 3.2 million acres of public lands administered by the BLM encompasses a 9.3 million-acre area. The record of decision for this regional plan was signed in March 2006 (BLM 2006).

All actions approved or authorized by the BLM must conform to the existing land use plan where one exists (43 CFR 1610.5-3 and 516 DM 11.5). A resource management action shall be specifically provided for in the plan, or if not specifically mentioned, shall be clearly consistent with the terms, conditions, and decisions of the approved plan or amendment [43 CFR 1601.0-5(b)]. The BLM land use plan for this area is the *California Desert Conservation Area Plan of 1980, as amended* (BLM 1980). In accordance with Title 43 CFR 1610.5-3, the proposed action and alternatives are in conformance with this approved land use plan:

Two of the four goals stated in the Geology, Energy, and Minerals Element of the CDCA Plan (BLM 1980), Chapter 3 are:

(1) Within the multiple-use management framework, assure the availability of known mineral resource lands for exploration and development.

(2) Encourage the development of mineral resources in a manner which satisfies national and local needs and provides for economically and environmentally sound exploration, extraction and reclamation processes.

Public lands identified in the proposal are designated Multiple-Use Class L (Limited Use). This designation protects sensitive, natural, scenic, ecological, and cultural resource values. Public lands in this designation are managed to provide a lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished (BLM 1980). For saleable minerals in Class L areas, mineral material sale locations require environmental assessment except as provided for under categorical exclusions in the departmental NEPA guidance and are subject to 43 CFR 3809 Regulations. The action is discretionary and can be denied if it is determined to cause unnecessary or undue degradation of the federal lands as defined by 43 CFR 3600. The BLM may recommend changes in such plans, and is under no obligation to approve deficient plans.

The private portions of the Lynx Cat Mountain Mine exist as a vested mine, operating under the authority of Reclamation Plan 90M-010, as approved by San Bernardino County on 28 June 1990. The mine is designated by the State of California as California Mine ID# 90-36-0049. The existing mine site consists of a 25-acre project and holds vested status with the County of San Bernardino (Webber and Webber Mining Consultants, Inc. 2014a). Mr. Mathewson owns the 81 acres± including the existing mine and adjacent areas to the north of the proposed expansion area. Authorized mining from the existing quarry onto 8.5 acres of public lands administered by the BLM would be granted by pertinent authorizations and associated documents issued from the Barstow Field Office. No third party valid existing rights would be affected by the proposed action.

3.0. Affected Environment

3.1. Biological Resources

The following subsections pertain to common and uncommon plant and animal species occurring at the mine site and along the proposed access road, based on studies performed by CMBC (2014a).

3.1.2. Field Surveys.

3.1.2.a. *Survey and Habitat Assessment Protocols.* For Agassiz’s desert tortoise, CMBC generally followed the survey protocol first identified by the USFWS (1992) and recently revised (USFWS 2010) for their detection. USFWS (2010) protocol recommends that transects be surveyed at 30-foot (10-meter) intervals throughout all portions of a given parcel. If neither tortoises nor sign are encountered during *action area* surveys and the project, or any portion of project is $\leq 0.8 \text{ km}^2$ (200 acres) or linear, three additional 30-foot (9 meters) belt transects at 655-foot (200 meters), 1,310-foot (400 meters), and 1,970-foot (600 meters) intervals parallel to and/or encircling the project perimeter should be surveyed.

The *action area* is defined by regulation as all areas to be affected directly or indirectly and not merely the immediate area involved in the action (50 CFR §402.02). For the mine, the action area is considered to be the 48-acre± private site, 8.5-acre BLM site, and adjacent areas out to approximately 300 feet west and 500 feet to the north of the private site (see Figure 1). The northern areas are owned by the Proponent and may serve as the recipient site for tortoises relocated from the active mine into that area, as per the translocation plan that will be developed for this project. For the access road, the action area is equated to those adjacent areas encompassed by the zone of influence transects, which occur out to 600 meters (1,970 feet±) either side (see Figures 1 and 4).

3.1.2.b. *Field Survey Methods.* As described below, there have been four distinct surveys performed, including (Section 3.1.2.b.i.) 4 May 2014 when level portions of the 25 acres on the northern and eastern portions of the private parcel were surveyed (Figures 2 and 3); (Section 3.1.2.b.ii.) 30 September 2014 when the level portions of the 25 acres comprising the western and southern portions of the private parcel were surveyed (Figures 2 and 3); (Section 3.1.2.b.iii.) 28 October 2014 when the access road and adjacent areas were surveyed (Figure 4); and (Section 3.1.2.b.iv.) 30 October 2014 when the rocky, eastern portions of the private parcel and the entire 8.5-acre BLM parcel were surveyed (Figures 2 and 3). Specific information is given for these four surveys following the summaries in Table 1.

Site Description and Surveyors		Survey Effort			Weather Conditions Start on Top/End on Bottom		
		Date 2014	Start – End Times X # Surveyors	Hours	Temps °F/°C	**Wind	% Cloud Cover
25 acres North & East	LaRue Dougherty	May 4	0830 to 1600 x 2	***15.0 hrs	71°/22° 94°/34°	2 ↑ 3 SW 4 ↑ 9 W	5% 95%
25 acres South & West	LaRue Radakovich	Sept 30	1530 to 1830 x 2	***6.0 hrs	91°/33° 85°/29°	2 ↑ 6 N 5 ↑ 14 W	0% 0%
Access Road	LaRue	Oct 28	0730 to 1730 x 2	20.0 hrs	49°/9°	Calm	40%

	Seamount				83°/28°	1 ↑ 5 W	40%
Rocky Areas & BLM Parcel	LaRue Seamount	Oct 30	0730 to 1530 x 2	16.0 hrs	49°/9° 84°/29°	Calm 1 ↑ 5 W	50% 40%
4 Surveys	4 Biologists	4 Days	N/A	57 hours	49°/9° 94°/34°	Calm ↑ 14	0% to 95%

*Biologists = Ed LaRue and Sharon Dougherty of CMBC; subcontractors Patricia Seamount and Mike Radakovich.

**Wind “2 ↑ 3 SW” = Average speed of 2 miles per hour, gusts up to 3 mph, out of the southwest.

***Note that it took 15 hours to survey the first 25-acre site compared to only 6 hours to survey the second 25-acre site; this is because six zone of influence transects were surveyed in adjacent areas during the first survey, which accounts for the extra time. Also, of the 25 acres surveyed in May 2014, only the southern 20 acres are to be mined.

3.1.2.b.i. North and East 25 Acres of Private Parcel. In his initial request, Mr. Joe Mathewson of Matcon Corporation, Inc. asked CMBC to survey the 25-acre parcel shown in yellow in Figures 2 and 3. Later, Mr. Mathewson enlarged the proposed mine area to 48.2 acres, which excludes several acres shown north of the red boundary line depicted in the referenced figures. Even so, the tortoise sign found in these areas is within the action area (see Figure 1) and therefore included in this assessment.

On 4 May 2014, Ed LaRue and Sharon Dougherty of CMBC surveyed the level portions of the 25-acre site and adjacent areas as described herein. This entailed a survey of 46 transects, spaced at 10-meter (30-foot) intervals and oriented in an east-west direction throughout the 25-acre± site, with the exception of the highly disturbed quarry area and the steep, rocky hill at the southeast corner. As depicted in Figure 3, buffer area transects were surveyed within the action area at 30-meter (100-foot) intervals to the north, south, east, and west, except where steep and rocky terrain made such surveys hazardous. Copies of the USFWS’ (2010) pre-project survey data sheet for this and the three other survey areas described below are included in Appendix C.

As transects were surveyed, LaRue kept tallies of observable human disturbances encountered on 23 of the 46 transects. The results of this method provide *encounter rates* for observable human disturbances. For example, two roads observed on each of 23 transects would yield a tally of 46 roads (i.e., two roads each encountered 23 times). Habitat quality, adjacent land uses, and this disturbance information are discussed below in Section 3.2 relative to the occurrence of Agassiz’s desert tortoise and other special status species on and adjacent to the subject property.

San Bernardino County (2006) also requires that any survey limitations be identified. The survey was carried out in early May, and many of the annual plants present on the site were already dried up. However, most were still identifiable despite their dried condition. This limitation did not significantly affect the results and conclusions given herein.

Weather conditions, which are reported in Table 1, at the beginning and ending of the four surveys included temperatures [measured approximately 2.5 inches (5 centimeters) above the ground], percent cloud cover, and wind speeds (average, maximum, and directions) as measured by a hand-held Kestrel® weather and wind speed meter.

3.1.2.b.ii. South and West 25 Acres of Private Parcel. The 25-acre light blue polygon in Figure 2 was surveyed on 30 September 2014, when LaRue and subcontractor, Mike Radakovich, surveyed relatively level portions of this 25-acre area. This entailed a survey of 50 transects, spaced at 10-meter (30-foot) intervals and oriented in an east-west direction throughout level portions of the 25-acre± parcel. This and 23± of the 25 acres described above comprise the private portions of the proposed mine site.

Although there were no obvious survey limitations and temperatures were ideal for the detection of tortoises, no animals were observed. As such, although there was considerably more tortoise sign on this site than on the 25-acre site surveyed in May when two tortoises were observed, the density formula given in USFWS (2010) could not be used because no tortoises ≥ 160 mm were observed. Herein, we rely on data interpretation to estimate how many tortoises may occur on the 48-acre± and 8.5-acre sites. Surveyed areas are sufficiently sandy to be suitable for Barstow woolly sunflower and desert cymopterus, which would not have been detectable in September.

3.1.2.b.iii. Proposed Access Road and Adjacent Areas. Following a meeting on 24 October 2014 between Mr. Mathewson and BLM Biologist, Lorenzo Encinas, LaRue spoke to Mr. Encinas and asked how he would like the proposed access road to be surveyed. Mr. Encinas indicated he would like a USFWS (2010) protocol-level survey to be performed. This entailed a survey of both sides of the access road along transects approximately 5 meters from the barren shoulders of the road, and six transects – three on each side of the road – spaced at 200-, 400-, and 600-meter intervals.

Using the methods described above for data collection and recordation on the proposed mine site, this survey was performed by LaRue and subcontractor, Patricia Seamount, on 28 October 2014. Unlike the three surveys performed on the proposed mine sites (both the private and BLM sites), disturbance data were not taken, as the Proponent has no intent to widen the access road. Such an effort would have included data too distant from the project area (i.e., between 200 and 600 meters away) to be indicative of the project area. No tortoises were observed during this survey of the action area; nor would the USFWS formula have been applicable to these data, as most of this survey was outside the project area footprint.

3.1.2.b.iv. 8.5-acre BLM Parcel and Mountainous Portions of Private Parcel. Mr. Mathewson added the 8.5-acre BLM parcel of land to the project footprint after the level, private-land portions of the proposed mine site had been surveyed. Prior to the addition, CMBC biologists and subcontractors had not surveyed the rocky, mountainous portions of the private parcel because (1) so much tortoise sign had already been found on relatively level terrains and (2) the mountainous areas were judged to present a safety hazard to the surveyors. However, when the BLM parcel (*all* of which is comprised of rugged mountainous terrain) was added, LaRue judged it was prudent to survey all rocky areas, including those that had been skipped on the private parcel.

The surveys of mountainous terrain were performed by LaRue and Seamount on 30 October 2014. The biologists first surveyed the residual portions of the private parcel

between 0730 and 1130, for a total of 8.0 hours. They then surveyed the BLM parcel between 1145 and 1515, for a total of 7.0 hours. A total of 20 transects was surveyed in an east-west orientation, although, like the private parcel, rugged terrain prevented the biologists from walking straight lines. LaRue tallied disturbances observed along 10 of the 20 transects surveyed. Although the surveys were performed at a time of year when spring annual plants would have limited detectability, there are no suitably sandy habitats for the two rare plants reported from the region, which are judged to be absent based on habitat type.

For all four surveys, the plant and animal species identified were recorded in field notes and are listed in Appendices A and B, respectively. Garmin® hand-held, global positioning system (GPS) units were used to survey straight transects and record Universal Transverse Mercator (UTM) coordinates (North American Datum – NAD 83) for site boundaries, rare species locations, and other pertinent information (Appendix C). A digital camera was used to take representative photographs (Appendix D), with locations and directions of exhibits shown in Figure 6. ©2014 Google™ Earth was accessed via the internet to provide recent aerial photographs of the subject property and surrounding areas (Figure 5).

3.1.3. Common Biological Resources. The common plant and animal species identified during the surveys are influenced by multiple factors such as elevation, topography, soil substrates, and previous land uses. Based on DeLorme Topo North America® 10.0 software, elevations on the private property range from approximately 718 meters (2,356 feet) near the southeast corner down to 648 meters (2,125 feet) near the northwest corner. The west boundary of the BLM parcel is at 689 meters (2,260 feet) gradually ascending up to an elevation of 736 meters (2,415 feet). Elevations along the proposed access road range from 648 meters (2,125 feet) at the north end up to 676 meters (2,217 feet) at the south end where it intersects Santa Fe Avenue.

On the private parcel, terrain is gently to moderately sloping on most of the site, except for within the existing quarry area, where there are nearly vertical cliffs (see Exhibit 3 and 6 in Appendix D), and on the steep, rocky slopes of Lynx Cat Mountain to the east and southeast (Exhibits 8 and 9). Soils range from very sandy on the alluvial fans on the western parts of the site (Exhibits 1, 2, and 5) to extremely rocky and boulder-strewn to the east and southeast.

There are several small areas interspersed among the shrubs and immediately north of the site that apparently hold surface water. No USGS-designated blue line streams occur on the site, although a small wash drains from east to west near the southeast corner of the private parcel. The BLM parcel occurs on the lower, mountainous slopes of Lynx Cat Mountain and has massive boulder outcrops throughout (Exhibits 11 through 14). The access road runs through relatively flat terrain, mostly sandy, with some rocky areas on the slight rises near the middle.

3.1.3.a. *Common Flora.* The 66 plant species identified during the surveys are listed in Appendix A. The plant communities found on the private parcel are a blend of white

bursage series and allscale series on the flats to the west, and white bursage series and creosote bush series on slightly higher elevations to the east (Sawyer and Keeler-Wolf 1995), and are the same along the access road, with creosote bush dominant to the southeast. Dominant shrubs include burro bush (*Ambrosia dumosa*), creosote bush (*Larrea tridentata*), allscale (*Atriplex polycarpa*), peach thorn (*Lycium cooperi*), and desert goldenhead (*Acamptopappus sphaerocephalus*).

Many annual plant species were still detectable on the site in May 2014, despite being fairly dried out. These include coreopsis (*Coreopsis* sp.), desert dandelion (*Malacothrix glabrata*), little blazing star (*Mentzelia albicaulis*), sunbonnets (*Loeseliastrum matthewsii*), loeseliastrum (*Loeseliastrum schottii*), desert five-spot (*Eremalche rotundifolia*), broad-flowered gilia (*Gilia latiflora*), dotted-throat gilia (*G. stellata*), yellow cups (*Camissonia brevipes*), Mojave sun-cups (*C. campestris*), brown-eyed primrose (*C. claviformis*), and others. Invasive, non-native species and disturbance-adapted native species were found on the site, especially along roads and at the edges of the existing open pit. These include cheat grass (*Bromus tectorum*), red brome (*B. madritensis* var. *rubens*), Russian thistle (*Salsola tragus*), split-grass (*Schismus* sp.), Saharan mustard (*Brassica tournefortii*), tansy (*Descurainia pinnata*), and fiddleneck (*Amsinckia tessellata*).

3.1.3.b. *Common Fauna.* The 9 reptile, 19 bird, and 9 mammal species identified during the surveys are listed in Appendix B. Reptiles include desert iguana (*Dipsosaurus dorsalis*), long-nosed leopard lizard (*Gambelia wislizenii*), common side-blotched lizard (*Uta stansburiana*), desert horned lizard (*Phrynosoma platyrhinos*), common chuckwalla (*Sauromalus obesus*), desert spiny lizard (*Sceloporus magister*), and western whiptail (*Cnemidophorus tigris*). Sidewinder (*Crotalus cerastes*) tracks were commonly observed on the sandy roads.

Birds observed on the site and in the vicinity include horned lark (*Eremophila alpestris*), rock wren (*Salpinctes obsoletus*), verdin (*Auriparus flavipes*), Say's phoebe (*Sayornis saya*), cactus wren (*Campylorhynchus brunneicapillus*), Brewer's sparrow (*Spizella breweri*), sage sparrow (*Amphispiza belli*), black-throated sparrow (*Amphispiza bilineata*), white-crowned sparrow (*Zonotrichia leucophrys*), blue-gray gnatcatcher (*Polioptila caerulea*), Wilson's warbler (*Wilsonia pusilla*), common raven (*Corvus corax*), and turkey vulture (*Cathartes aura*).

Mammals detected on the site include common desert species such as black-tailed hare (*Lepus californicus*), kangaroo rat (*Dipodomys* sp.), desert wood rat (*Neotoma lepida*), coyote (*Canis latrans*), kit fox (*Vulpes macrotis*), gray fox (*Urocyon cinereoargenteus*), and others. Evidence of bobcat (*Lynx rufus*) was very common, as might be expected from the name of the site.

3.1.4. Agassiz's Desert Tortoise. A significant paper was published in June 2011 (Murphy et al. 2011) whereby the "desert tortoise" of the Mojave Desert was split into two species, including *G. agassizii*, referred to as "Agassiz's desert tortoise," and a newly described species, *G. morafkai*, referred to as "Morafka's desert tortoise," which occurs

in the Sonoran Desert. According to Murphy et al. (2011), "...this action reduces the distribution of *G. agassizii* to only 30% of its former range. This reduction has important implications for the conservation and protection of *G. agassizii*, which may deserve a higher level of protection." Agassiz's desert tortoise is the threatened species that occurs in the region surrounding the subject mine.

Positive evidence of tortoises found during these surveys is summarized in Table 2 below. Sign was abundant on all sites; the sandy roads were especially conducive to preserving tortoise tracks. Sign found *on* either the private site or BLM site is self explanatory. Those sign found "Off Private Site" were located in adjacent areas, but not on the BLM parcel or along the access road transects. Although the May 2014 survey included lands both on and north of the 48-acre± private parcel, only those sign found within the red boundary line depicted on Figure 2 are included as being on the site.

Data for scat include both time since deposition and diameter. "Fresh" scat are those deposited during 2014, versus "Older" scat that were deposited prior to this year. For these data, scat ≥ 12 mm in diameter are judged to be deposited by adult tortoises (≥ 180 mm mid carapace length), and those ≤ 11 mm were deposited by subadult tortoises (< 180 mm mid carapace length). "Dirt" burrows are those created in sandy soils by the active digging of the burrow floor and passive abrasion of the carapace on the upper soil surface. Whereas, "rock shelters" are naturally occurring crawl spaces (also called "coversites") in which tortoises seek refuge. Tortoises, tracks, scat, and/or egg shell fragments must be present for a rock shelter to be listed as such (i.e., there are numerous similar spaces without tortoise sign, which were not mapped or identified as rock shelters).

Site	Animals	Carcasses	Tortoise Scat				Burrows		Other*	
			Fresh Adult	Older Adult	Fresh Subadult	Older Subadult	Dirt	Rock Shelter	Tracks	Egg Shell
On Private Site	1	5	140	140	8	7	24	6	30	1
On BLM Site	-	4	4	14	1	1	-	3	-	-
Off Private Site	1	1	35	40	2	1	20	-	5	-
On Access Road	-	1	3	7	-	-	6	-	-	-
Off Access Road	-	3	45	64	4	24	41**	-	1	1
Totals	2	14	227	265	15	33	91	9	36	2

* Other sign included two courtship rings found on the private 48-acre± parcel.

** Two of the 41 burrows adjacent to the access road were judged to be those of subadult tortoises (i.e., with openings that were < 180 mm wide).

The following pertinent observations are given regarding the above data:

- Although two tortoises were found on the 25 acres surveyed in May 2014, only one of them was on the final 48-acre± private parcel, as reported in Table 2. In any case, the two are used herein so that the USFWS (2010) formula for determining densities can be used for that particular parcel.
- Only 2 of 91 burrows (2%) and 48 of 540 scat (9%) were judged to be from subadult tortoises, which therefore make up a relatively small proportion of detected tortoises in the area. The presence of egg shells indicates recent attempts at reproduction, although these shells are likely evidence of nest depredation.
- All nine of the rock shelter/coversites were restricted to the mountainous BLM parcel (3 sites) and small hill on the southeast corner of the private parcel (6 sites). There are a multitude of such sites available for tortoise use on Lynx Cat Mountain that were not counted for lack of tortoise sign but could be used in the future, during mining.
- The six burrows listed as occurring “On Access Road” were observed within approximately 5 meters of the compacted surface, and were not literally *on* the road. They do indicate that tortoises are using habitats, even for burrowing, immediately adjacent to this road.
- The prevalence of tortoise tracks on the private parcel (30 of 36, or 83%) is indicative of the relatively sandy substrates that are conducive to registering tortoise tracks. Conversely, the absence of tracks on the BLM parcel and rocky portions of the 48-acre± site are indicative of rocky-to-boulder-strewn substrates where tracks do not register.

Although all four surveys were performed during the suggested seasons (i.e., in the period of April-May and September-October), and within the recommended temperature limits (i.e., below 40°C or 104°F), only two tortoise were observed during the survey of the 25 acres in May of 2014. In the final proposal, the northern 3.5 acres± have been excluded from the mine footprint, where one of the two tortoises was observed. Even so, it does provide an opportunity to estimate the number of tortoises on that 25-acre site, and compare those findings to the other sites where tortoises occur.

Based on the equation provided in USFWS (2010) that considers the number of tortoises observed, various probability parameters, and the size of the area surveyed, a total of approximately 5 (formula result = 4.96) adult tortoises are estimated to occur on the 25-acre site surveyed in May 2014. Since no tortoises were observed on either the remaining 25 acres of the private parcel or on the 8.5-acre BLM parcel and the density formula cannot be applied, the amount of tortoise sign on those sites compared to the May 2014 site are given in Table 3.

		Tortoise Scat				Burrows		Other*		
Site	Animals	Carcasses	Fresh	Older	Fresh	Older	Dirt	Rock	Tracks	Egg

			Adult	Adult	Subadult	Subadult		Shelter		Shell
25 acres in May	2	1	59	38	6	2	11	2	9	-
25 acres in Sept/Oct	0	3	91	104	2	5	16	6	26	1
8.5-acre BLM	0	4	4	14	1	1	-	3	-	-

One can see that more sign was found on the 25-acre site where no tortoises were observed in September/October 2014 than on the 25-acre site where two tortoises were observed in May 2014, where the estimated density is five animals. Burrows are probably a better indicator of tortoise abundance than are scat. So, if the estimate of five tortoises was associated with 13 burrows and coversites, there would be 8.5 tortoises associated with the 22 burrows and coversites found on the other 25-acre parcel. Given these observations, we estimate as few as 10 and as many as 15 tortoises on the 48-acre± site.

The same burrow comparisons cannot readily be applied to the BLM parcel where tortoises are hiding beneath boulders rather than digging burrows. Given the distribution of tortoise sign depicted in Figure 3, we would judge that a minimum of three tortoises and perhaps as many as seven may occur. Given this rationale, we would estimate between 13 and 22 tortoises on the 57 acres±. In spite of these discussions (and because one of the two tortoises observed occurs north of the proposed, reduced footprint), we believe there are likely fewer than 10 tortoises on this site. However, since the USFWS' biological opinion would need to be amended if the number of tortoises is underestimated, we provide the more liberal estimate of 13 to 22 tortoises.

As mentioned in Section 2.2.2, LaRue tallied disturbances along his transects. The methodologies were similar enough that the two 25-acre parcels and BLM parcel (although slightly more meandering) may be directly compared, showing how current uses differ on flat versus mountainous portions of the site.

Site	OHV Tracks	Roads & Trails	Shotgun Shells	Skeet Targets	Shooting Areas	Shooting Targets	Rifle Shells
25 acres in May	165	59	46	25	15	6	22
25 acres in Sept/Oct	129	5	19	2	0	4	5
8.5-acre BLM	8	0	7	2	0	0	15

An important distinction between the 25-acre site surveyed in the spring compared to the 25 acres surveyed in the fall is that the May 2014 survey area encompasses the existing open pit in its entirety, whereas the September/October survey area is to the west and south of the open pit. One can see that all forms of observable human disturbance, and particularly shooting, increase as one approaches the quarry pit. The several roads leading in to the mine, including proposed access road, provide ready access for even passenger vehicles, and the pit serves as a focal point for shooting and target practice. In fact,

CMBC's (2014a) field notes indicate that "shooting and OHV are too common to tally in the open pit." Several disturbances common to more urban areas including dumping, domestic dog sign, and equine use were not observed. The site is within the southern boundary of the Harper Lake Cattle Allotment that was recently retired, and old cow dung is present throughout and common in places.

The County (2004) requires that habitat categories designated by the BLM (1989) be identified in all Agassiz's desert tortoise technical reports. Although habitat categories apply only to public lands administered by the BLM, regulatory agencies typically determine habitat compensation ratios based on the nearest BLM habitat categories (BLM 2005, 2006). With the formulation of the West Mojave Plan (BLM 2005) and its formal adoption through a Record of Decision (BLM 2006), all lands that are inside Desert Wildlife Management Areas, including the subject property, are characterized as having the highest priority management area for viable populations of the Agassiz's desert tortoise.

Both sites and the northern 1.25 miles of the proposed (existing) access road are found within Agassiz's desert tortoise critical habitat, which was designated in 1994 (USFWS 1994a). These same project components are within the Superior-Cronese DWMA as recommended in the Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994b) and formally adopted in March 2006 as a result of the West Mojave Plan Record of Decision (BLM 2006). The designated DWMA in this area is only two miles wide, located between areas to the north associated with Harper Lake and to the south associated with the community of Hinkley. The 2.1± linear miles of access road between Santa Fe Avenue and the southern DWMA boundary are in BLM-designated Category 3 habitats.

3.2. Hydrology

The site lies within the Harper Valley Groundwater Basin of the South Lahontan Hydrologic Region. The Harper Valley Groundwater Basin is a 640 square mile area drained by numerous ephemeral streams towards Harper (dry) Lake. Quaternary lacustrine and alluvial deposits, including unconsolidated younger alluvial fan material and unconsolidated to semi-consolidated older alluvium, can be water-bearing within the basin. The basin has a total storage capacity of approximately 7,000,000 acre-feet, and natural recharge is estimated at approximately 13,600 acre-feet per year (DWR, 1971).

The Lynx Cat Mountain Mine is situated at an average elevation of 2,240 feet approximately one mile south of Harper Dry Lake. The closest surface water occurs in a pond at the southern edge of Harper Dry Lake about 3.3 miles northwest of the mine at an elevation of 2,030 feet. Groundwater-level measurements in two wells within five miles of the mine site indicated groundwater elevations of between 1,900 and 2,000 feet (DWR, 2014). Groundwater measurement levels in these two wells have been steadily decreasing since the 1960s (DWR, 2014).

Annual temperatures range from near 10° Fahrenheit in winter to around 120° Fahrenheit in summer. Precipitation is generally less than 4 inches per year. The area does experience periodic heavy showers, occasionally subjecting the region to flash flooding. There are no large areas that drain into the site; water flows that occur onsite generally are from precipitation that falls directly onto the site. The site is not located within a recognized floodway or 100-year floodplain but is occasionally subject to flash flooding.

3.3. Minerals

The existing mine site consists of a 25-acre project and holds vested status with the County of San Bernardino. A portion of the existing site has been periodically mined since 1963, resulting in approximately 5.5 acres of pre-SMARA disturbance. Mined products include unusually high quality railroad ballast grade rock as well as quality, Caltrans grade construction aggregate for use in concrete, asphalt, and general Green Book specification construction aggregates.

The gray granite rock found in the Lynx Cat Mountain Mine is an extremely hard, dense, and high quality granite rock that was naturally-formed and extremely pure with little or no overburden. It is a very clean, well exposed, high quality granite deposit with minimal overburden and very low stripping to product ratio. Virtually 100% of the rock is marketable and the fact that it has been successfully tested for use in Caltrans and Green Book grade chip seal, concrete, and asphalt applications gives this mine added value. The entire Lynx Cat Mountain is composed of this same granitic rock strata and its close proximity to both the rail siding at Hinkley and to Highway 58 give it an ideal location from which to produce and ship construction aggregate, rip rap, and paving stone to the Los Angeles, Highway 395, and Interstate 15 corridor markets.

3.4. Soils and Topography

The following are excerpts from CHJ, Inc. (2014). A map (1960) and report (1967) by Dibblee include a description of the geologic formations of the western Mojave Desert and include the area of the subject mine. The mine is located in a rocky hillside area mantled with and surrounded by aprons of unconsolidated alluvial and colluvial sediments, typical of the Mojave Desert province. The terrain in the mine area includes boulder outcrops and surface deposits/mantle of colluvium and alluvium. Bedrock types in the quarry area include Mesozoic-age quartz monzonite and quartz diorite (located off site to the east). The oldest rocks in the mine area consist of Mesozoic intrusive quartz monzonite while young colluvium and alluvium form a mantle on flatter slopes and low-lying areas of the site.

The dominant feature of the rock mass within the mine boundary is a steeply dipping, continuous and parallel north-to-south-trending joint system with the strike of these joints typically ranging between 50 and 170 degrees. Additional structures include two steeply dipping orthogonal joint systems striking between 150 and 170 degrees and 65 to 75 degrees. Together with a fourth, flat-lying, less continuous joint system, these structures constitute an orthogonal joint system common to granitic outcrops.

The granitic bedrock within the mine area has moderately- to well-developed joint systems and few highly weathered zones. Natural outcrops include common features of arid weathering of granitic rock such as dark surface patina, exfoliation joints, and orthogonal joints systems. The surface weathering profile is generally thin—extending about 3 to 5 feet below natural surface outcrop areas.

The mine site may be subject to ground shaking during earthquake events. There are no other local geologic conditions that could adversely affect the project such as Special Studies Zones, County Fault Hazard Zones, landslides, mudflows, Liquefaction Hazard Areas, differential settlement, hydroconsolidation, collapsible or expansive soils, wind erosion, water erosion, sedimentation, or inundation due to earthquake-induced dam failure.

4.0. Environmental Consequences

4.1. Impacts to the Desert Tortoise

CMBC (2014a) estimated that 51.2 of the 56.7 acres are presently vegetated by varieties of creosote bush scrub, including white bursage series in alluvial areas and creosote bush series in rocky, mountainous areas. The balance of 5.5 acres is comprised of barren and semi-barren areas occupied by the existing open pit. If full mine build out is realized, these 57 acres± would be lost to mine activities including all native and non-native plant species present at the time of ground disturbance. There is also the possibility of promoting the growth of native weed species and non-native species that are benefitted by soil disturbance such as would occur by mining activities. Plants adjacent to both the mine site and access road are likely to be subjected to increased dust deposits. There is no proposal to widen the access road, so except for deposits of dust on plants in adjacent areas, no additional direct impacts to common plant species are anticipated by using this existing road as a haul road.

Webber and Webber Mining Consultants, Inc. (2014a) indicates the project will operate up to five days per week, 12 months per year and up to 24 hours per day, to accommodate construction project schedules. The volume of truck traffic will depend on type and duration of various construction market activities. At the maximum annual production rate of 400,000 tons per year, up to 65 truck trips per day could occur to haul materials. A more typical level of truck volume during average production will be 20-40 truck trips per day. Given this anticipated traffic level, it is likely that animals will be crushed along the access road. Road-killed animals may then be scavenged by known tortoise predators, including coyote and common raven. These species may also be attracted to the expanding open pit, particularly if the site is not kept clear of refuse that could subsidize these predators.

Although mining would be phased and affect incremental portions of the 48.2 acres of private land and 8.5 acres of BLM-administered public land, it is expected that the entire 56.7-acre mine site would be impacted, reclaimed, and revegetated by 31 December

2055. As such, 51.2 acres of suitable tortoise-occupied habitat and 5.5 acres of marginal habitat associated with the existing open pit would be lost. Although reclamation and revegetation activities will partially reclaim some of this habitat for future use by tortoises, given the amount of time it takes for full restoration to occur, if ever, these impacts are considered to be permanent.

In addition to impacts to habitat, tortoises may also be harmed or accidentally killed. Given the results of these surveys, adult tortoises, which are relatively more common, would be the most likely to be harmed, although the small sizes of juveniles make them more difficult to see and therefore more vulnerable. Smaller animals could also be taken by predators, such as common ravens and coyotes, which will likely be attracted to mining activities and the new presence of humans in the otherwise remote region.

Based on the presence of numerous sign and two adult tortoises, CMBC (2014a) concluded that tortoises occur on both the private and BLM sites, more so in level areas but also in rocky, mountainous areas, and alongside the entire length of the 3.4.-mile± access road. Based on information given in Section 3.2 of their report, they estimated that there may be fewer than 10 tortoises onsite. However, in the interest of avoiding re-consultation under Section 7 between BLM and USFWS should this limit be exceeded, they provided the liberal estimate that between 13 and 22 tortoises may occur and be affected on the 56.7 acres comprising the private and public sites.

Best management practices identified below are intended to educate mine workers so that impacts would be minimized; to implement speed limits and dust control to avoid crushing tortoises crossing the access road by mine-related vehicles and to minimize the amount of dust deposited on plants in adjacent areas; and to apply other measures that will restrict impacts to the mine site and minimize indirect impacts. Biologists will be enlisted to survey for and remove tortoises from the active mine area. Such animals will be relocated into adjacent lands owned by the Proponent or managed by the BLM so that they may remain in habitats of which they are familiar and be monitored until they resume normal behavior and seek shelter in either natural or artificial burrows. Mining will also be phased so that only necessary portions are mined and the number of tortoises relocated is minimized.

Even so, it is possible that tortoises may be missed during clearance surveys and subsequently be injured or killed, and other animals could burrow beneath the perimeter fence and enter into harm's way. It is also possible that relocated tortoises will not find suitable natural burrows or use artificial ones in time to avoid heat stress or exposure to predators. In spite of implementing anti-predator measures, such as maintaining a clean workplace and avoiding ponding water, activities are still likely to attract predators that may take smaller tortoises. So, even if all protective measures are implemented in a conscientious manner, impacts are still likely to occur to tortoises, and habitats will be degraded and lost.

4.2. Conservation of the Desert Tortoise

Whereas numerous minimization measures are identified in the next section and will be required by CDFW (see CMBC 2014b) and BLM (see BLM 2014), mitigation measures have also been identified to provide for the long-term conservation of desert tortoises. The Proponent intends to acquire 285 acres to offset the loss of 57 acres, which is at a compensation ratio of 5:1 to reflect current management in DWMAs. For each acre mined, the Proponent would provide five acres of appropriate habitats to an entity acceptable to pertinent regulatory agencies. Endowment and enhancement fees would also be provided (CMBC 2014b), as required by the CDFW's 2081 incidental take permit.

5.0. Proposed Mitigation Measures

This section provides specific measures that the Proponent would implement to minimize impacts to occupied habitats and the desert tortoise.

5.1. Mitigation for Desert Tortoise Habitats

Both reclamation (Webber and Webber Mining Consultants, Inc. 2014a) and revegetation plans (CMBC 2014c) have been developed to reclaim and revegetate the mine site approximately 40 years after final project removal. Five years of reclamation monitoring have been proposed to see that success criteria are realized, which should occur on or before 31 December 2055. Overburden on the project site consists primarily of seed-containing topsoil and rubble and generally comprises the top 12 inches of surface material. This material will be removed from the surface where it exists, and stockpiled in test bed islands or berms along the perimeter of the quarry for subsequent use during revegetation. Revegetation activities will commence in late fall to correspond with the onset of winter storms in the region. All project areas that have been prepared for revegetation will be planted only with site indigenous plant species.

The ultimate goal of revegetation of the project site is to accelerate the reestablishment of native vegetation subsequent to land disturbance, eventually leading to vegetative conditions that existed prior to mining. Once ripping of the surfaces is completed, the revegetation process will begin with the placement of soil islands on all accessible, horizontal areas. Soil islands will basically consist of vegetative growth media, including any site collected topsoil, fine-textured waste tailings from the screening operation, and site collected organics (shrubs, bushes, grasses). The soil island concept was developed by the National Park Service and has been successful in revegetation projects at the Joshua Tree National Park, as well as other locations. The National Park Service research concluded that desert vegetation has a much better chance of success developing naturally from an established soil island. The soil islands essentially act as bases from which other naturally occurring seeds can potentially develop and spread.

No later than in the fall of 2020, soil islands will be established within the initial revegetation area located in the northern portion of the project site. The soil islands will cover approximately 25% of the initial revegetation area and will average 6 to 12 inches in thickness, depending on available soil/organics. These islands will be seeded with a

commercial high desert seed mixture of plant species that are identified in the Revegetation Plan (CMBC 2014c) of the site prior to the onset of the winter storm season. Initial revegetation efforts will not include any irrigation, fertilizers, mulch, lime, or other non-native constituents unless recommended by a qualified individual.

Under the supervision of a qualified person, the BLM-approved high desert seed mix, as described in the Revegetation Plan (CMBC 2014c), will be implanted in the soil islands of the initial revegetation area. Seeds will be obtained from a BLM-recommended list of commercial seed suppliers, or collected from the project site and nearby areas. In the fall of 2021, progress of the initial revegetation activities will be assessed. If necessary, a qualified person will recommend adjustments to the seed mixture so the desired results can be achieved. This will be done in coordination with officials of San Bernardino County.

Once a revegetation strategy and method is proven to be successful in the initial test bed revegetation area, revegetation of the project site will commence. Soil islands will be placed on those project areas that will not be impacted by further mining activities each fall in every subsequent operating year. This process will continue until the entire site has been revegetated and monitored for five years to verify the success criteria described in the Revegetation Plan have been achieved.

5.2. Mitigation for the Desert Tortoise

CMBC (2014b) has completed a formal application for incidental take of the tortoise to be authorized under Section 2081 of the California Fish and Game Code, which is incorporated by reference. The application identifies 73 minimization and mitigation measures that are not reiterated herein. Temporally, these measures would be implemented before, during, and after mining operations. In general, they provide for worker education; minimizing impacts by delineating construction areas and restricting impacts to those areas; biological monitoring; habitat compensation; and other typical measures identified in a recent 2081 permit (CDFW 2014b).

USFWS wildlife biologist, Raymond Vizgirdas in the Palm Springs Field Office was assigned to this project in early November 2014 by Ray Bransfield of the Ventura Field Office. Mr. Vizgirdas provided the Proponent with a copy of the biological opinion completed for the Highway 58 widening project in March 2013 (USFWS 2013). Herein, the Proponent identifies the following protective stipulations, which are slightly modified as necessary from those given in USFWS (2013) to accommodate mining, and are to be implemented as the most recently acceptable protective measures.

1. Proponent will designate a field contact representative who is responsible for overseeing compliance with protective stipulations for the desert tortoise and for coordination on compliance. The field contact representative will halt all mining activities that are in violation of the stipulations. The field contact representative will have a copy of the stipulations when on the site. The field contact representative may be the resident engineer, mine foreman, or a contracted biologist.

2. At least 30 days prior to the initiation of ground-disturbing mine activities within the proposed project site, Proponent will ensure that their final plans and specifications include all requirements for preconstruction surveys for desert tortoises in all proposed staging areas, parking areas, and project elements, and flagging of these areas. The field contact representative will verify compliance with this and all other protective measures.

3. Proponent will ensure that all mine personnel attend a worker education program presented by the authorized biologist. The program will include information on special status species within the project area, identification of these species and their habitats, techniques being implemented during mining to avoid impacts to species, consequences of killing or injuring an individual of a listed species, and reporting procedures when encountering listed or sensitive species. Mining crews, foremen, and other personnel potentially working on site will attend this desert tortoise education program and place their name on a sign-in sheet. At a minimum, the monitoring notebook will include a copy of the USFWS' biological opinion, the CDFW's section 2081 permit, and a summary of the education program.

4. Only biologists authorized by the USFWS will handle desert tortoises. Proponent will submit the name(s) of the proposed authorized biologist(s) to the USFWS for review and approval at least 30 days prior to the onset of activities. No mining activities will begin until the approval of the authorized biologist(s). The authorized biologist(s) will follow the protocols outlined in chapter 7 of the Desert Tortoise Field Manual (Service 2009) for handling and marking desert tortoises.

5. To (a) minimize impacts to tortoises and (b) simultaneously maintain a sufficiently large active mining area, the Proponent plans to phase mining to the smallest practical area that will accomplish these two objectives. In this way, only a few tortoises will be displaced from a given phase at any one time; those tortoises remaining in contiguous areas that would be displaced during development of subsequent phases would be able to disperse into adjacent habitats and possibly not need to be relocated. The following measures will be implemented during each phase. Although the exact acreages of the phases are unknown at this time, cumulatively, they will not exceed the 48.2 acres of private land and the 8.5 of BLM lands directly affected by the proposed action.

6. Prior to the start of mining, Proponent will install fencing to exclude desert tortoises from each phase of mining under the direction of an authorized biologist. Proponent will construct the fence according to the protocols provided in chapter 8 of the Desert Tortoise Field Manual (Service 2009). If desert tortoises are encountered during installation of the fence, the authorized biologist will move the individual the shortest distance possible to an area outside the fence where it will be safe. Proponent will relocate any tortoises found inside the permanent desert tortoise fence either onto adjacent BLM land per agreement with the BLM or on contiguous lands owned by the Proponent that are outside the permanent fence and not to be mined. The authorized biologist will use his or her judgment regarding the best measures to use to ensure the desert tortoise does not

immediately return to the area inside of the fence. The authorized biologist may contact the USFWS or CDFW to discuss specific situations if the need arises.

7. Proponent will maintain the integrity of the fence to ensure that desert tortoises are excluded from the active quarry area during all subsequent mining activities. The fence will be inspected regularly; initially, it will be inspected on a monthly basis, but Proponent may adopt a different schedule, based on experience. Proponent will inspect and, if necessary, repair the fence immediately after any rainstorm that occurs during times of the year or at temperatures when desert tortoises are likely to be active.

8. After the fencing is installed and before the onset of ground-disturbing activities, the authorized biologist will survey the area and remove all desert tortoises. The authorized biologist will survey the area as much as is needed to ensure that all desert tortoises have been found; generally, all desert tortoises will be considered to have been removed once a complete survey of the work area is conducted without finding any additional animals. Desert tortoises that are found inside the fenced area will be placed on the other side of the desert tortoise exclusion fence onto either BLM land or the Proponent's land that is not to be mined (i.e., estimated at 32 acres±). The authorized biologist will use his or her best judgment to determine the optimal location for placement of desert tortoises. In general, desert tortoises will be moved to the nearest safe area on either BLM or the Proponent's land. The authorized biologist will follow the protocols provided in chapter 7 of the Desert Tortoise Field Manual (Service 2009) for marking and relocating desert tortoises.

9. All desert tortoises that need to be moved will be handled as described in chapter 7 of the Desert Tortoise Field Manual (Service 2009) for marking and relocating desert tortoises. These procedures will ensure desert tortoises that are being moved are protected to the greatest degree possible from transmission of disease, exposure to adverse weather conditions, and other adverse situations that may arise during handling.

10. Proponent will have an authorized biologist on-site throughout the initial ground-disturbing activities to monitor relocated desert tortoises and to remove any additional individuals encountered during grubbing of the initial phase(s). The authorized biologist will follow the protocols provided in chapter 7 of the Desert Tortoise Field Manual (Service 2009) for marking and relocating desert tortoises. These and other pertinent measures described herein will be implemented prior to and during expansion of mining activities into each subsequent phase.

11. Proponent will ensure that workers do not bring firearms and pets into the mine area. This measure does not apply to law enforcement personnel and working dogs.

12. Proponent will implement a program to ensure that trash and litter generated by the proposed action do not attract common ravens (*Corvus corax*) and other potential predators of the desert tortoise. All trash and food items will be promptly contained within closed, common raven-proof containers. Proponent will remove containers

regularly from the project site to reduce the attractiveness of the area to common ravens and other desert tortoise predators.

13. As a means of minimizing incidental take of the desert tortoise, the USFWS shall require the Proponent post speed limits of 20 miles per hour along Water Valley Road and the unnamed road between the mine site and Santa Fe Avenue, and strictly enforce speed limits along these portions of the haul road. This speed limit does not apply to existing paved roads. The Proponent will have a designated mine employee maintain a log of tortoises observed along this haul road and maintain the log and maps at the mine site or in possession of the mine foreman. This information may be used later, particularly if one or more tortoises is harmed or killed by mine-related vehicles, to determine if fencing or other protective measure(s) are prudent. The records will include date, time, exact location (preferably by hand held GPS units), and approximate size of each tortoise sighted.

14. Proponent will submit a report to the USFWS and CDFW within 30 days of the completion of initial grubbing of each phase. This report will include information on: the number of desert tortoises handled, injured, and killed; the results of monitoring of relocated desert tortoises; and any difficulties in implementing the protective measures.

15. As part of their compliance with the California Endangered Species Act, Proponent will acquire compensation habitat to be managed in perpetuity for the conservation of the desert tortoise.

Again, the measures given above are a subset of those that will be required for development and operation of the mine. Both the CDFW in its 2081 incidental take permit and the BLM in stipulations in its right-of-way grant(s) will have measures similar to or the same as those given above. The Proponent would implement the more restrictive measure where two or more measures conflict. For example, if one permit stipulates a speed limit of 20 miles per hour, as given above, and another designates the speed as 15 miles per hour, the slower speed limit would be implemented and enforced.

The Proponent is committed to working with all pertinent parties to ensure coordination and communication for necessary authorization and eventual implementation of protective measures. At the time of this writing (December 2014), the following agency contacts are considered applicable entities to ensure complete coordination:

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6.0. Residual Effects

Although mine reclamation and revegetation will predictably minimize the impacts of mining, the scars, open pit, and residual impacts will remain for many years after the mine is no longer operational. It is also likely, as is the current situation, that local residents and other visitors will continue to be attracted to the reclaimed pit where shooting, camping, and other deleterious uses are likely to ensue. Even with implementation of minimization and mitigation measures, mining would result in the loss of 56.7 acres, including 51.2 acres of suitable tortoise-occupied habitat and 5.5 acres of marginal habitat associated with the existing open pit. The Proponent is committed to implementing all protective measures identified in USFWS' biological opinion, BLM's right-of-way grant(s), and CDFW's 2081 permit to further offset these residual effects.

7.0. Cumulative Effects

Cumulative impacts within the region include future state, federal, and private actions affecting listed species on state, federal, and private lands. The proposed action area includes all areas affected directly or indirectly by the federal action, not only the immediate area of the proposed action (BLM 2007).

Herein, the proposed action area includes the region surrounding the mine site and along the proposed access road between the site and Hinkley. The mine site is three miles east and four miles north of the nearest residences, and 4.5 miles from the nearest commercial enterprise located on Hinkley Road. The southern terminus of the access road is within a half mile of several residences, and eastern portions of the access road that are not included within the 3.4-mile BLM right-of-way bisect a residential community in northwestern Hinkley. Given the relative remoteness of Lynx Cat Mountain Mine from residential and commercial development, no known new residences or commercial facilities are planned for the foreseeable future. There may be new development along portions of the access road, but these are not likely to be common.

Barstow is the nearest incorporated community to the subject property. In the biological technical report recently completed for the city's updated general plan (CMBC 2014d), the city anticipates that there are 15 residential, commercial, and industrial projects likely to be developed between 2014 and 2020 that would, if completed, result in the loss of approximately 3,900 acres. Desert tortoise sign was found on 10 of these 15 sites.

There are thousands of acres of desert habitats currently being considered for solar and wind energy developments. We are not aware of any such proposals within the action area associated with this proposed action. According to their website at

Abengoasolar.com, the 1,765-acre solar facility located approximately six miles northwest of the Lynx Cat site is near completion and scheduled to come online in 2014. Draft environmental documents associated with the Desert Renewable Energy Conservation Plan (DRECP) were released in September 2014 (California Energy Commission *et al.* 2014). Although it is too soon to determine the impacts of this desert-wide plan, it could streamline renewable energy development in the area, resulting in losses of desert tortoise habitats from both public and private lands throughout the region.

Caltrans was issued a biological opinion by the USFWS in 2013 (USFWS 2013) for the realignment and widening of Highway 58. Not only is this widening project at its nearest point approximately four miles south of the proposed mine site, aggregate materials mined from the Lynx Cat quarry would be provided to Caltrans to support this project.

During the October 2014 tortoise surveys (CMBC 2014a), LaRue and Seamount observed a half dozen exploratory pits immediately west of the private parcel that were interconnected by tracks of heavy equipment such as those associated with a backhoe or bulldozer. When Mr. Mathewson was asked about these exploratory impacts, he indicated that he was not responsible for them. It appears, then, that there are other miners in the area, presumably seeking a new location to acquire sand and gravel that could be used for the highway widening project. As a professional miner, Mr. Mathewson is not aware of any existing mines in the region that could supply the required materials; a new mine would have to be built from scratch to provide these materials.

In April and May 2013, Sundance Biology, Inc. (2013) performed presence-absence tortoise surveys and probabilistic sampling within the 30,014-acre proposed project site in support of Pacific Gas and Electric's (PG&E) Comprehensive Groundwater Cleanup Strategy for Historical Chromium Discharges from Pacific Gas and Electric (PG&E)'s Hinkley Compressor Station Project for which a Final EIR was distributed in 2013 (ICF International 2013). According to Sundance Biology, Inc., the proposed remediation activities under all alternatives have the potential to remove habitat that supports the federally protected desert tortoise thereby resulting in potentially significant impacts. Desert tortoise habitat is distributed throughout the project area. Both construction-related and operations and maintenance activities may contribute to potentially significant impacts that could result in the loss of desert tortoise individuals and removal of desert tortoise habitat. Specifically, these impacts to desert tortoise could occur to potentially occupied burrows as a result of collision, crushing, entrapment, and removal of habitat due to human activities during project implementation.

8.0. Conclusions

For the desert tortoise, BLM concludes the following with regards to the reactivation and expansion of the existing 5.5-acre Lynx Cat Mountain Mine site:

(1) Given the presence of tortoise sign throughout the mine site areas and alongside the intended access road, BLM has determined that the project *may affect* federally-designated, threatened desert tortoise.

(2) Conducting pre-ground disturbance surveys, delineating and fencing mining areas, administering tortoise awareness programs, employing an authorized biologist to monitor initial ground disturbing activities, restricting speed limits along the access road, and implementing anti-predator measures for ravens and coyotes, among others, are specific measures recommended to effectively avoid or minimize impacts to tortoises occurring at the mine site and along the access road.

(3) Given BLM's *may affect* determination, formal section 7 consultation will be required between USFWS and BLM and a project-specific biological opinion will be issued for the project. Protective minimization measures and off-site mitigation measures are identified herein and will be incorporated in the biological opinion issued by USFWS to BLM.

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Appendix A. Plant Species Detected

The following plant species were identified onsite or in adjacent areas (i.e., signified by “+”) during the general biological inventory described in this report. Those plant species that are protected by pertinent County and/or state ordinances are signified by “(SC)” following the common name.

GNETAE

Ephedraceae

Ephedra nevadensis

ANGIOSPERMAE: DICOTYLEDONES

Asteraceae

Acamptopappus sphaerocephalus

Ambrosia dumosa

Chaenactis fremontii

Coreopsis sp.

Malacothrix glabrata

Tetradymia sp.

Xylorhiza tortifolia

Boraginaceae

Amsinckia tessellata

Cryptantha angustifolia

Cryptantha c.f. *circumscissa*

Cryptantha dumetorum

Cryptantha nevadensis

Cryptantha pterocarya

Pectocarya sp.

Brassicaceae

**Brassica tournefortii*

**Descurainia pinnata*

Guillenia lasiophylla

Lepidium fremontii

Thysanocarpus curvipes

Cactaceae

Cylindropuntia echinocarpa

Echinocactus polycephalus

Chenopodiaceae

Atriplex polycarpa

Grayia spinosa

GNETAE

Joint-fir family

Nevada joint-fir

DICOT FLOWERING PLANTS

Sunflower family

Desert goldenhead

Burrobush

Desert pincushion

Coreopsis

Desert dandelion

Cottonthorn

Desert aster

Borage family

Fiddleneck

Narrow-leaved forget-me-not

Capped cryptantha

Forget-me-not

Nevada forget-me-not

Wing-nut forget-me-not

Pectocarya

Mustard family

Saharan mustard

Tansy

California mustard

Bush peppergrass

Lace pod

Cactus family

Silver cholla (SC)

Cottontop cactus (SC)

Goosefoot family

Allscale

Spiny hop-sage

Krascheninnikovia lanata
**Salsola tragus*

Fabaceae

Psoralea argemone

Geraneaceae

**Erodium cicutarium*

Hydrophyllaceae

Phacelia c.f. *crenulata*

Phacelia tanacetifolia

Loasaceae

Mentzelia albicaulis

Malvaceae

Eremalche rotundifolia

Nyctaginaceae

Mirabilis bigelovii

Onagraceae

Camissonia brevipes

Camissonia campestris

Camissonia claviformis

Polemoniaceae

Eriastrum sp.

+*Eriastrum densifolium*

Eriastrum eremicum

Gilia latiflora

Gilia stellata

Loeseliastrum matthewsii

Loeseliastrum schottii

Polygonaceae

Chorizanthe brevicornu

Eriogonum fasciculatum

Eriogonum pusillum

Eriogonum c.f. *thomasii*

Eriogonum viridescens

Ranunculaceae

Delphinium parishii

Winter fat

Russian thistle

Pea family

Indigo bush

Geranium family

Red-stemmed filaree

Water-leaf family

Purple phacelia

Phacelia

Stick-leaf family

Little blazing star

Mallow family

Desert fivespot

Four o'clock family

Desert wishbone plant

Evening-primrose family

Yellow cups

Mojave sun-cups

Brown-eyed primrose

Phlox family

Woolly star

Woolly star

Woolly star

Broad-flowered gilia

Dotted-throat gilia

Sunbonnets

Loeseliastrum

Buckwheat family

Brittle spineflower

California buckwheat

Buckwheat

Thomas eriogonum

Buckwheat

Crowfoot larkspur

Larkspur

Solanaceae

Lycium andersonii

Lycium cooperi

Zygophyllaceae

Larrea tridentata

Nightshade family

Anderson's box-thorn

Peach thorn

Caltrop family

Creosote bush

ANGIOSPERMAE: MONOCOTYLEDONES

MONOCOT FLOWERING PLANTS

Poaceae

Achnatherum hymenoides

Achnatherum speciosum

**Bromus madritensis* ssp. *rubens*

**Bromus tectorum*

Pleuraphis rigida

**Schismus* sp.

Grass family

Indian ricegrass

Desert needlegrass

Red brome

Cheat grass

Big galleta

Split-grass

* - indicates a non-native (introduced) species.

c.f. - compares favorably to a given species when the actual species is unknown.

Some species may not have been detected because of the seasonal nature of their occurrence. Common names are taken from Beauchamp (1986), Hickman (1993), Jaeger (1969), and Munz (1974).

Appendix B. Animal Species Detected

The following animal species were detected during the general biological inventory described in this report. Special status animal species are signified by “(SC)” following the common names.

REPTILIA

Testudinidae

Gopherus agassizii

Iguanidae

Dipsosaurus dorsalis

Sauromalus obesus

Gambelia wislizenii

Sceloporus magister

Uta stansburiana

Phrynosoma platyrhinos

Teiidae

Cnemidophorus tigris

Viperidae

Crotalus cerastes

AVES

Cathartidae

Cathartes aura

Tyrannidae

Sayornis saya

Alaudidae

Eremophila alpestris

Corvidae

Corvus corax

Remizidae

Auriparus flavipes

Troglodytidae

Campylorhynchus brunneicapillus

Salpinctes obsoletus

REPTILES

Land tortoises

Agassiz’s desert tortoise (SC)

Iguanids

Desert iguana

Common chuckwalla

Long-nosed leopard lizard

Desert spiny lizard

Common side-blotched lizard

Desert horned lizard

Whiptails

Western whiptail

Vipers

Sidewinder

BIRDS

Vultures

Turkey vulture

Tyrant flycatchers

Say’s phoebe

Larks

Horned lark

Crows and jays

Common raven

Verdins

Verdin

Wrens

Cactus wren

Rock wren

Muscicapidae
Polioptila caerulea

Mimidae
Toxostoma lecontei

Emberizidae
Wilsonia pusilla
Spizella breweri
Amphispiza bilineata
Amphispiza belli
Zonotrichia leucophrys

MAMMALIA

Leporidae
Lepus californicus

Geomyidae
Thomomys bottae

Heteromyidae
Dipodomys sp.

Cricetidae
Neotoma lepida

Canidae
Canis latrans
Vulpes macrotis
Urocyon cinereoargenteus

Mustelidae
Taxidea taxus

Felidae
Lynx rufus

Thrushes and allies
Blue-gray gnatcatcher

Mockingbirds and thrashers
LeConte's thrasher (SC)

Sparrows, warblers, tanagers
Wilson's warbler
Brewer's sparrow
Black-throated sparrow
Sage sparrow
White-crowned sparrow

MAMMALS

Hares and rabbits
Black-tailed hare

Pocket gophers
Botta pocket gopher

Pocket mice
Kangaroo rat

Rats and mice
Desert wood rat

Foxes, wolves and coyotes
Coyote
Kit fox
Gray fox

Weasels and skunks
American badger (SC)

Cats
Bobcat

Nomenclature follows Stebbins, *A Field Guide to Western Reptiles and Amphibians* (2003), third edition; Sibley, National Audubon Society, the *Sibley Guide to Birds* (2000), first edition; and Ingles, *Mammals of the Pacific States* (1965), second edition.

Appendix C. Field Data Sheets Completed during Four Focused Surveys

The USFWS asks that consultants include copies of the data collected in the field from which the results and conclusions given in reports are derived. As such, following this page are copies of the four data sheets completed by Ed LaRue for the four surveys on the 48-acre± private mine site (i.e., two, 25-acre surveys in May and September 2014), access road (October 2014), and the 8.5-acre BLM mine site (October 2014).

USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 4/5/2014 Survey biologist(s): EQ Calver and Sharon Dwyer (see title page)
(day, month, year) (name, email, and phone number)
 Site description: 25 acres on the north and east sides of the Project quarry area
(project name and size; general location)
 County: San Bernardino Quad: Hinkley Location: 471790/3871285 NAD83
(UTM coordinates, lat-long, and/or TMS; map datum)
 Circle one: 100% coverage or Sampling Area size to be surveyed: 25 acres Transect #: 46 Transect length: Variable
 GPS Start-point: 471735/3871500 (658 m) Start time: 0830 am/pm
(easting, northing, elevation in meters)
 GPS End-point: 471910/3871000 (716 m) End time: 1600 am/pm
(easting, northing, elevation in meters)
 Start Temp: 22 °C End Temp: 34 °C

Live Tortoises

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1	471835	3871462	7/1-0900	Burrow	7/1-250mm	None
2	471846	3871478	7/1-1030	Burrow	7/1-240mm	None
3						
4						
5						
6						
7						
8						

Tortoise Sign (burrows, scats, carcasses, etc)

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1	Variable		5 carcasses, 280 adult scat, 15 subadult scat, 30 burrows, 30 tracks	
2	See maps in report		1 egg shell fragment	
3				
4				
5				
6				
7				
8				

Page: 1 of 4

Transect number: _____

USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 30/9/2014 Survey biologist(s): Ed LaRue and Mike Radakovich (see the page)
(day, month, year) (name, email, and phone number)

Site description: 25 acres on south and west sides of private quarry area
(project name and size; general location)

County: San Bernardino Quad: Hinkley Location: 477610/3871160 NAD 83
(UTM coordinates, lat-long, and/or TRS, map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 25 acres Transect #: 50 Transect length: Variable

GPS Start-point: 477615/3871400 (48m) Start time: 1530 am/pm
(easting, northing, elevation in meters)

GPS End-point: 477960/3870750 (603m) End time: 1830 am/pm
(easting, northing, elevation in meters)

Start Temp: 33 °C End Temp: 29 °C

Live Tortoises

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3						
4	See Notes on previous page					
5						
6						
7						
8						

Tortoise Sign (burrows, scats, carcasses, etc)

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1				
2				
3				
4	See Notes on previous page			
5				
6				
7				
8				

Page: 2 of 4

Transect number: _____

USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 28/10/2014 Survey biologist(s): Ed LaFue and Patricia Stewart (Seattle Pg)
(day, month, year) (name, email, and phone number)
 Site description: 3.4-mile access road between Lynx Cat Mine and Santa Fe Road
(project name and size; general location)
 County: San Bernardino Quad: Hinkley Location: 477530/3870580 (NAD83)
(UTM coordinates, lat-long, and/or TRS, map datum)
 Circle one: 100% coverage or Sampling Area size to be surveyed: 3.4 miles Transect #: B Transect length: ~3.4 miles
 GPS Start-point: 477310/3870960 (648 m) Start time: 0730 am
(easting, northing, elevation in meters)
 GPS End-point: 480315/3866820 (676 m) End time: 1730 am
(easting, northing, elevation in meters)
 Start Temp: 9 °C End Temp: 28 °C

Live Tortoises

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present
	Easting	Northing				
1						
2						
3			None			
4						
5						
6						
7						
8						

Tortoise Sign (burrows, scats, carcasses, etc)

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1	Variable		4 carcass, 19 adult scat, 88 subadult scat	
2	See map in Report		47 burrows, 1 tracks, 1 egg shell fragment	
3				
4				
5				
6				
7				
8				

Page: 3 of 4

Transect number: _____

USFWS 2010 DESERT TORTOISE PRE-PROJECT SURVEY DATA SHEET

Please submit a completed copy to the action agency and local USFWS office within 30-days of survey completion

Date of survey: 30/10/2014 Survey biologist(s): Ed Lohr and Patricia Stewart (see title page)
(day, month, year) (name, email, and phone number)

Site description: 8.5-acre BLM parcel
(project name and size; general location)

County: San Bernardino Quad: Hinkley Location: 476080/3871310 (NAD 83)
(UTM coordinates, lat-long, and/or TRS; map datum)

Circle one: 100% coverage or Sampling Area size to be surveyed: 8.5a. Transect #: 20 Transect length: Variable

GPS Start-point: 477910/3871235 (685m) Start time: 1145 am
(easting, northing, elevation in meters)

GPS End-point: 476060/3871450 (694m) End time: 1515 am
(easting, northing, elevation in meters)

Start Temp: 9 °C End Temp: 29 °C

Live Tortoises

Detection number	GPS location		Time	Tortoise location <small>(in burrow: all of tortoise beneath plane of burrow opening, or not in burrow)</small>	Approx MCL >160-mm? <small>(Yes, No or Unknown)</small>	Existing tag # and color, if present	
	Easting	Northing					
1							
2							
3			<u>No tortoises</u>				
4							
5							
6							
7							
8							

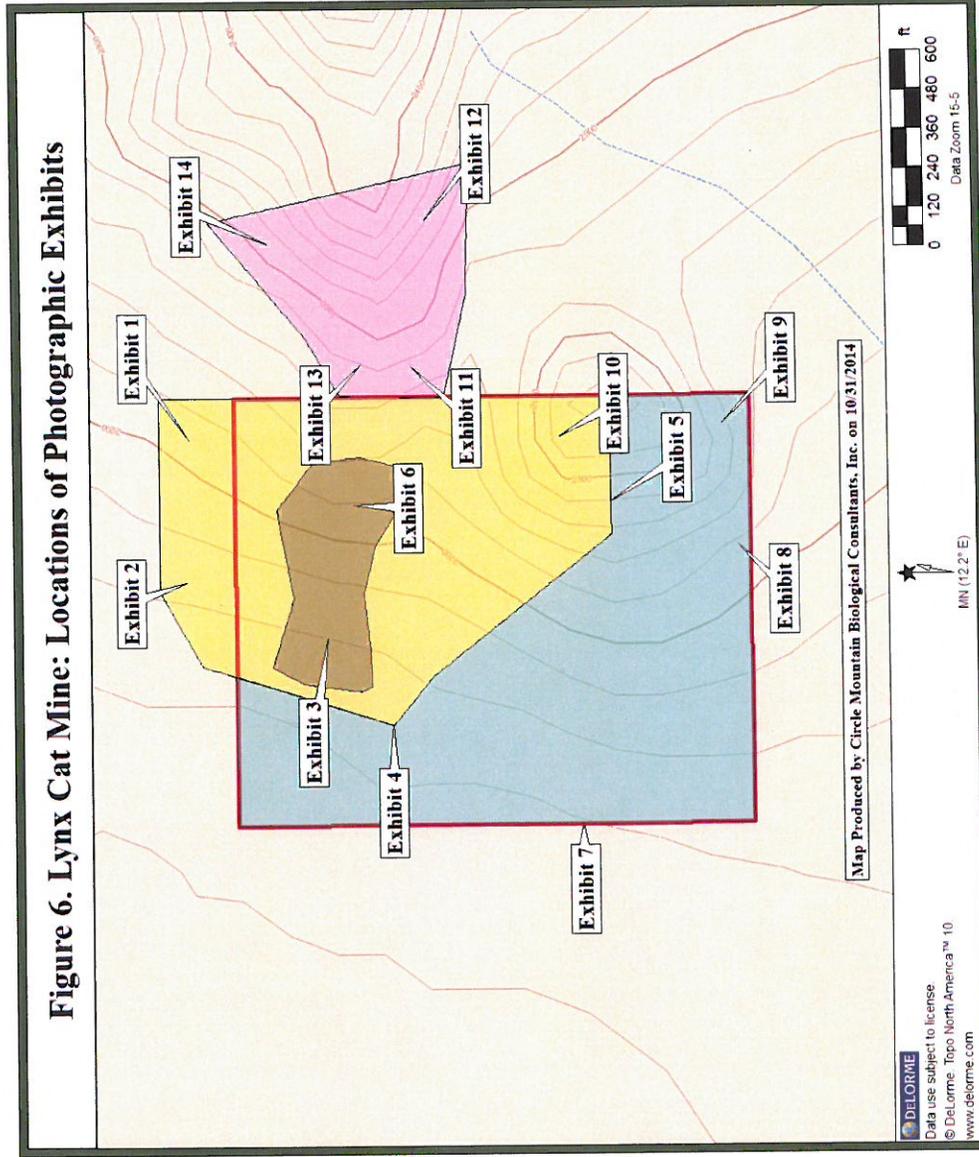
Tortoise Sign (burrows, scats, carcasses, etc)

Detection number	GPS location		Type of sign <small>(burrows, scats, carcass, etc)</small>	Description and comments
	Easting	Northing		
1	<u>Variable</u>		<u>4 carcasses</u>	<u>18 adult scat, 2 subadult scat</u>
2	<u>see map in report</u>		<u>3 rock shelters/coversites</u>	
3				
4				
5				
6				
7				
8				

Page: 4 of 4

Transect number: _____

Appendix D. Photographic Exhibits



Locations of the 14 photographic exhibits on the next 7 pages are depicted in Figure 6.

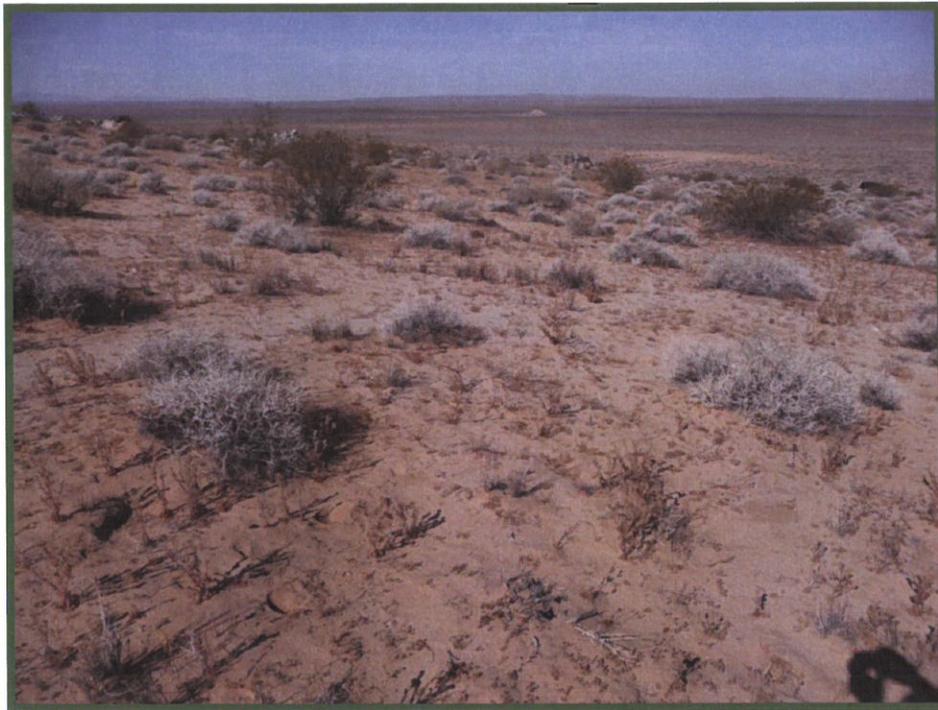


Exhibit 1. View from the northeast corner of the private mine site, facing southwest (see Figure 6 for locations and directions of photographs).



Exhibit 2. View from the northwest corner of the private mine site, facing southeast.



Exhibit 3. View from entrance of the existing quarry, facing east.



Exhibit 4. View from west of the existing quarry site, facing east.

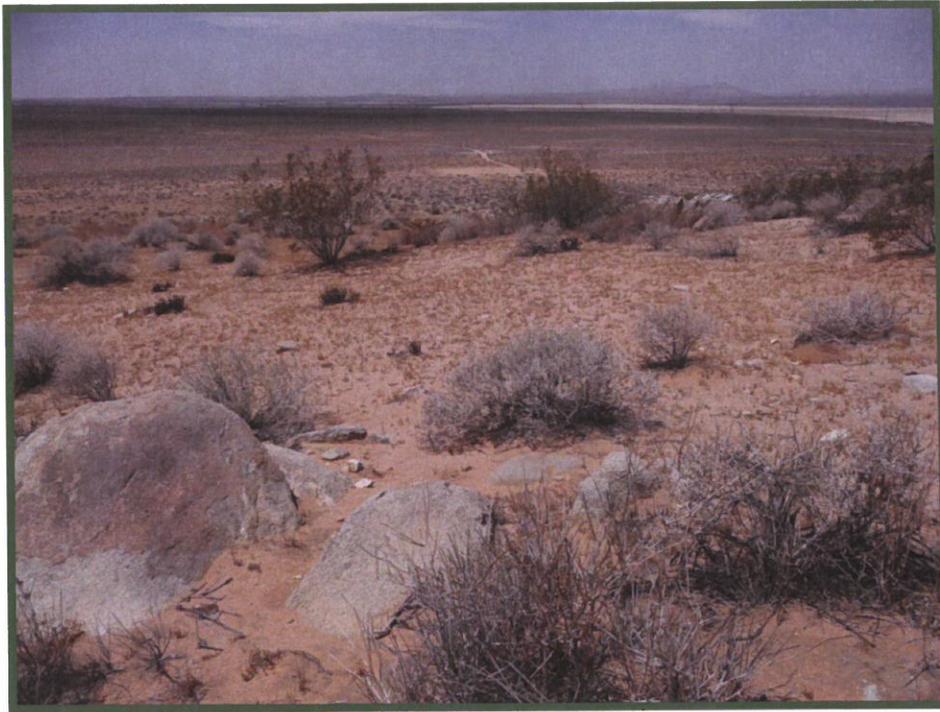


Exhibit 5. View from southern boundary of private site, facing northwest.



Exhibit 6. Raven nest on wall of existing quarry.



Exhibit 7. Active adult tortoise burrow on private parcel with extreme amounts of tracks.

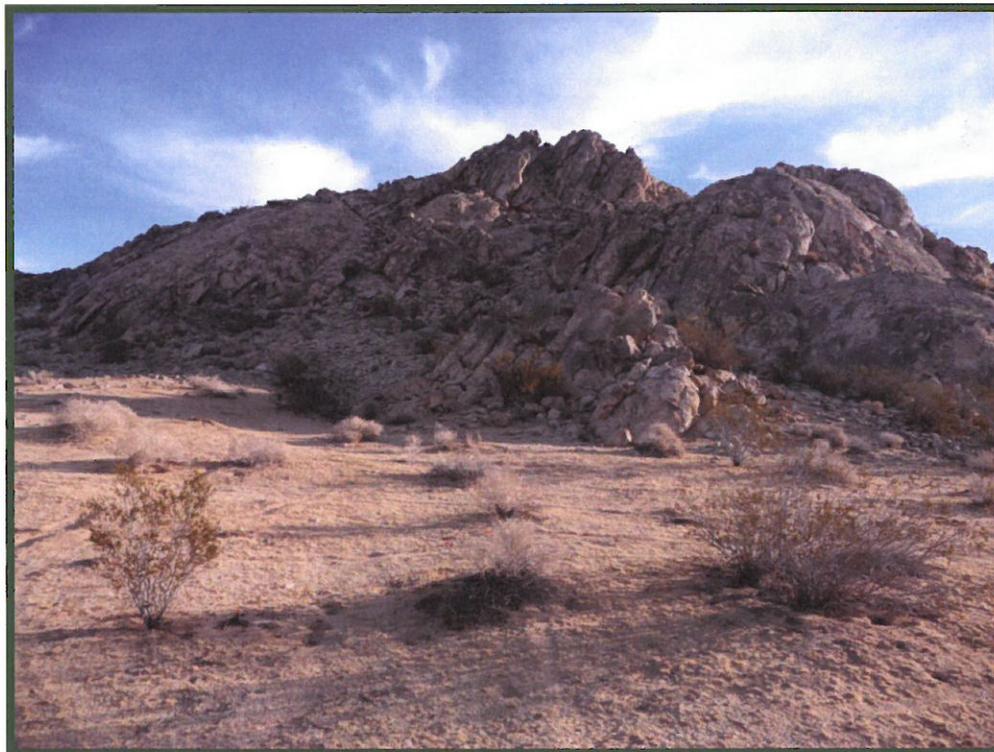


Exhibit 8. View of the southern outcrop area of private parcel, facing northeast.



Exhibit 9. View of the southeastern corner of the private parcel, facing north-northwest.

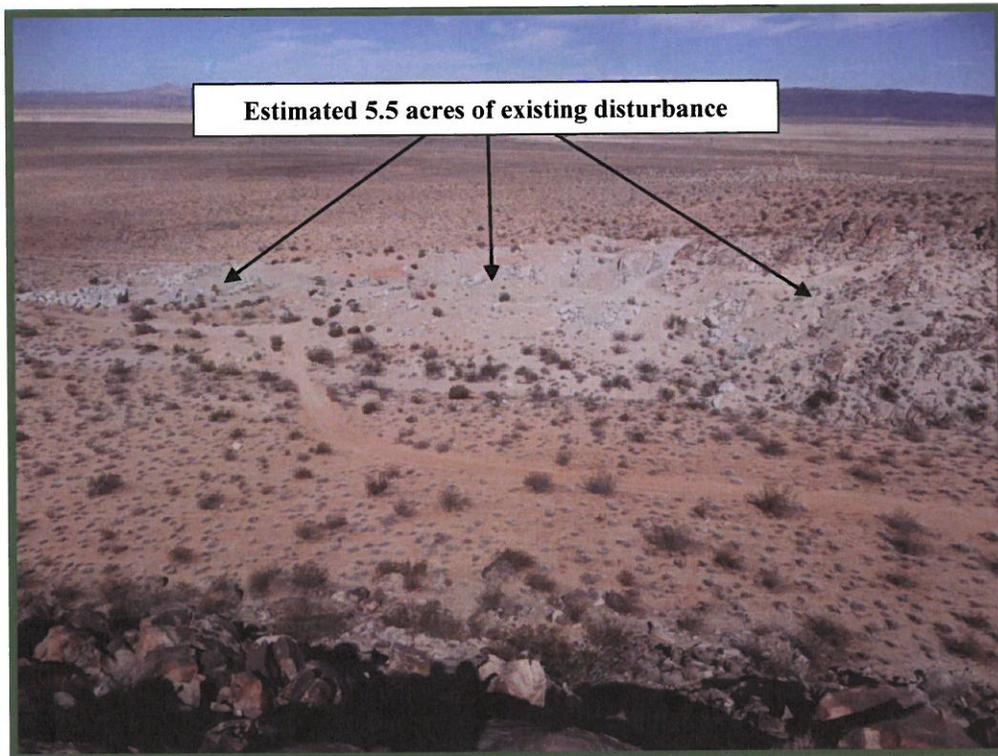


Exhibit 10. Overview of existing quarry from top of southeast hill, facing northwest.

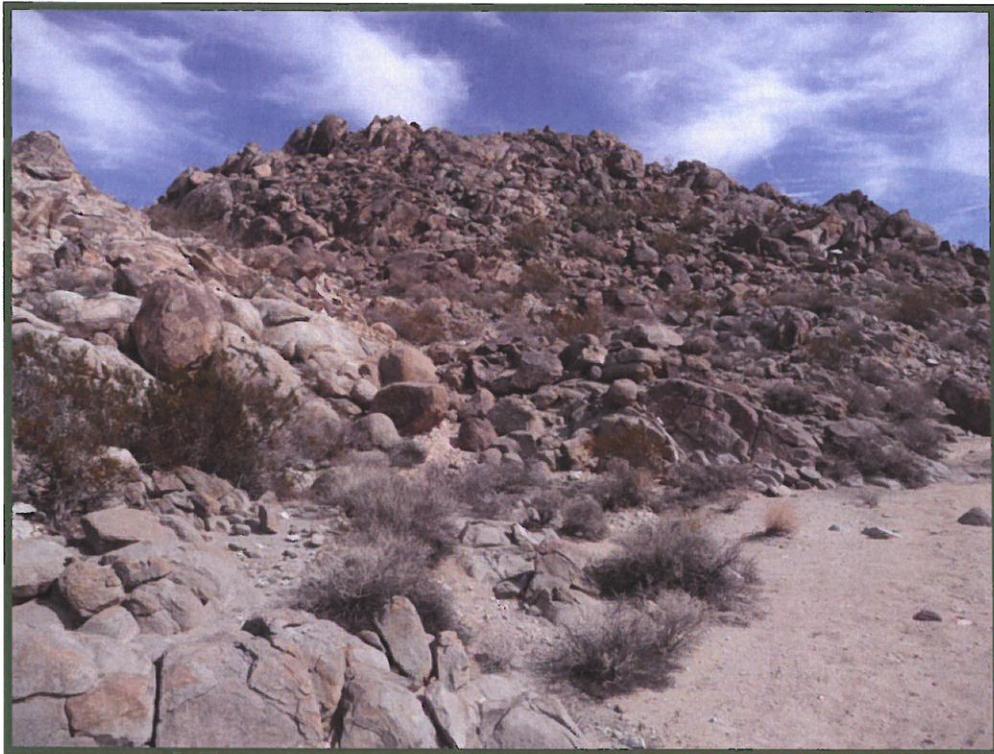


Exhibit 11. View of BLM parcel from southwest corner, facing northeast.

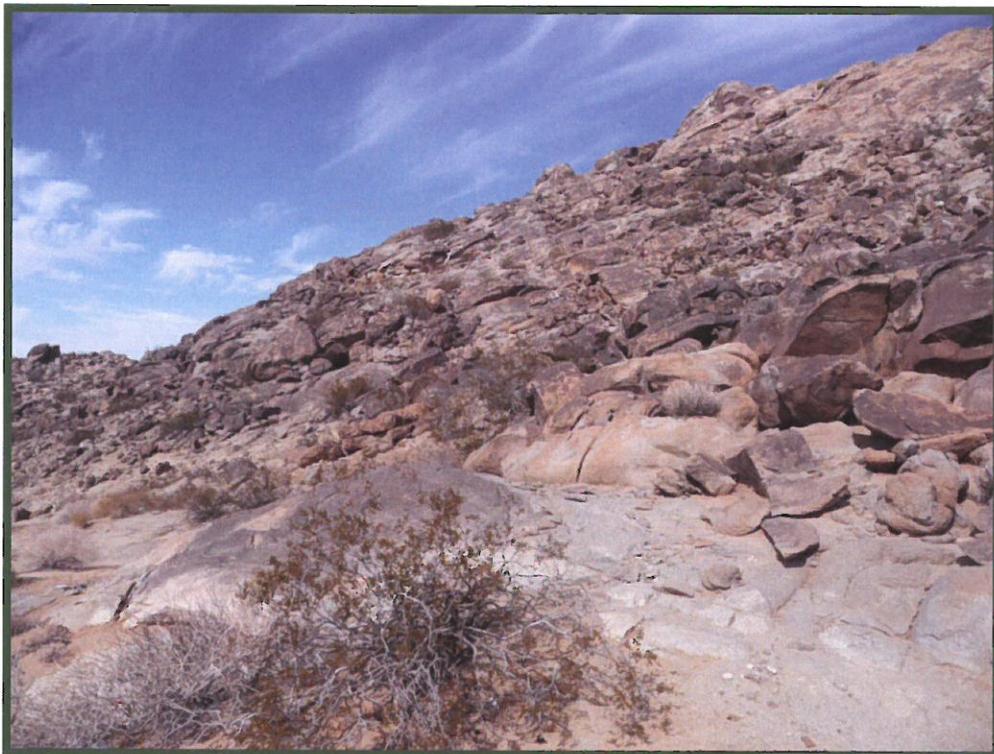


Exhibit 12. View of BLM parcel from southeast corner, facing northwest.

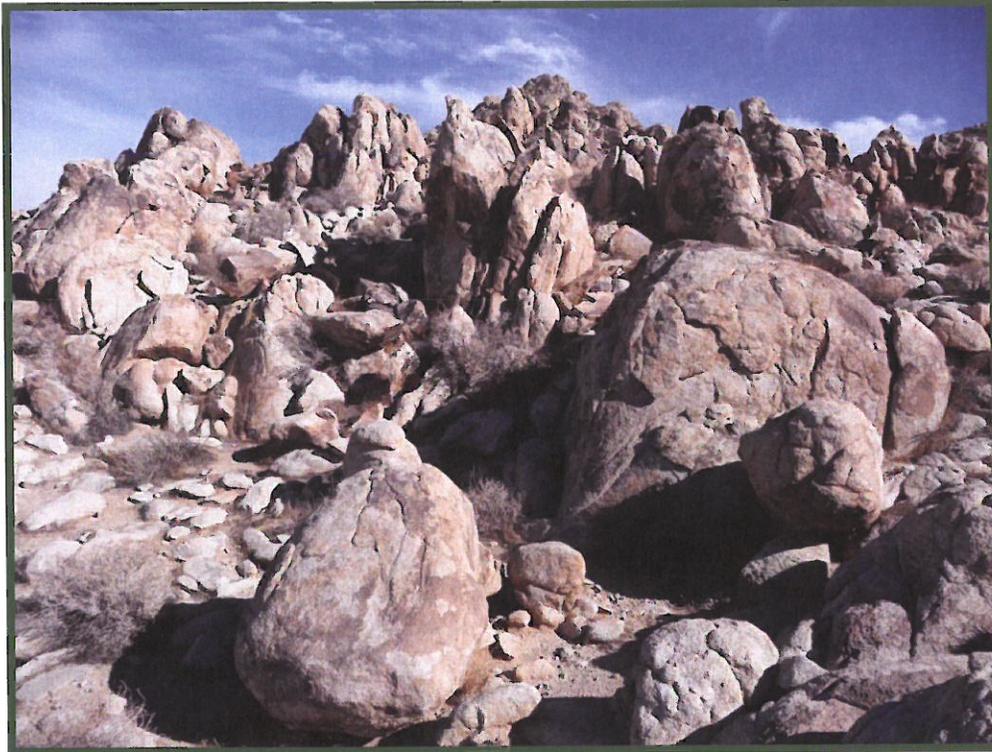


Exhibit 13. View of BLM parcel from northwest corner, facing southeast.

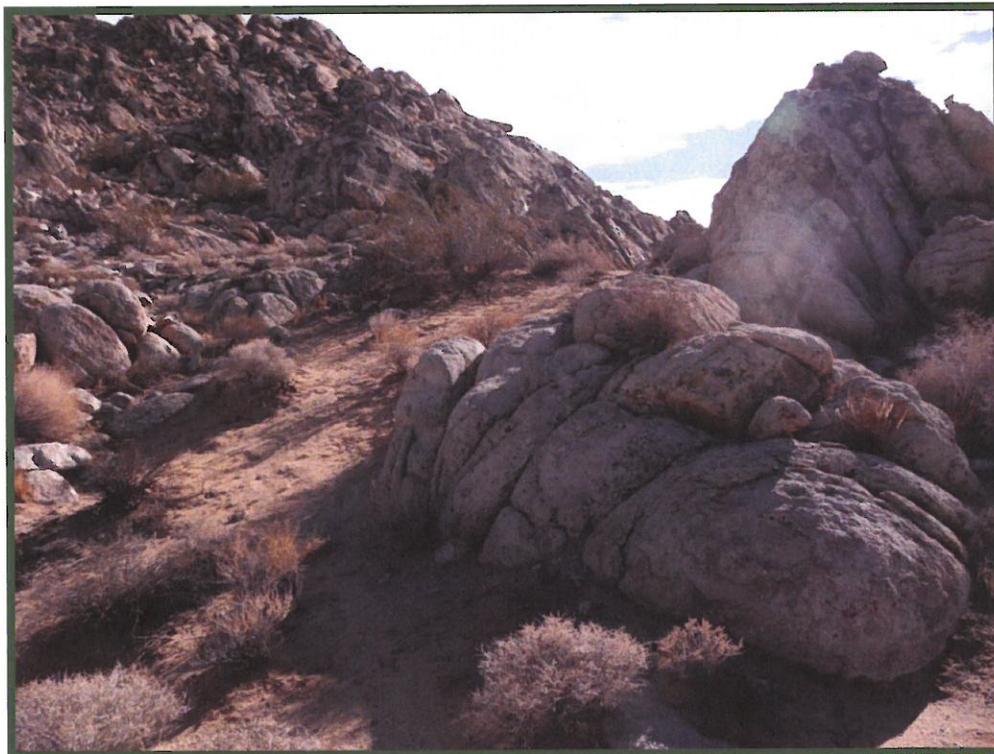


Exhibit 14. View of BLM parcel from northeast corner, facing southwest.