MOHAVE GROUND SQUIRREL SURVEY REPORT
SEARLES VALLEY MINERALS INC BORROW PIT PROJECT

CITY OF TRONA, CALIFORNIA

Acreage estimated at 40.3

Prepared by:

ENVIRA
P. O. Box 2612
Ramona, CA 92065
Phone 619-885-0236
E-mail phvergne@aol.com

Trapping Surveys Conducted On:
April 14-18 of 2017
May 27-31 of 2017
July 1-5 of 2017

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Prepared For :

Searles Valley Minerals Inc.

TABLE OF CONTENTS

Section

1.0 EXCUTIVE SUMMARY

2.0 PROJECT AND PROPERTY DESCRIPTION

3.0 BACKGROUND MOHAVE GROUND SQUIRREL

4.0 FOCUSED STUDY/SPECIES OF CONCERN

5.0 METHODS

6.0 MOHAVE GROUND SQUIRREL SURVEY RESULTS

7.0 IMPACTS AND RECOMMENDATIONS

8.0 CERTIFICATION

9.0 REFERENCES

FIGURES

Figure 1 Regional Location

Figure 2 Project Site and Trapping Grid

Table 1 Live Trapping Dates

Table 2 Grid Census Locations

Table 3 Live Trapping Data Summary

APPENDICES

Appendix A CDFW MGS MOU

Appendix B WEATHER DATA

Appendix C PHOTOGRAPH LOG

Appendix D PLANT SPECIES OBSERVED WITHIN THE STUDY AREA
WILDLIFE SPECIES OBSERVED WITHIN THE STUDY AREA

1.0 EXECUTIVE SUMMARY

Philippe Vergne of ENVIRA was contracted by Searles Valley Minerals Inc. (SVM) to conduct a phase one Mohave ground squirrel (*Xerospermophilus mohavensis*)-MGS survey, and focused trapping survey on a proposed Borrow Pit expansion.

The Searles Valley Minerals (SVM) East Borrow Pit (CA Mine ID # 91-36-0028) have mined sand and gravel from the East Borrow Pit (pursuant to San Bernardino County Reclamation Plan 78M-0013) to provide material for construction of facilities on Searles Dry Lake since 1978.

The East Borrow Pit is located to the east of Trona, within Section 20, Township 25 South, Range 44 East, Mount Diablo Meridian, upon public land administered by the Bureau of Land Management Ridgecrest Field Office (BLM). SVM conducts mining of the site pursuant to a mineral material sales contract with BLM.

This report documents the findings of baseline Mohave ground squirrel trapping surveys for the Project Site shown on Figure 1- Project Vicinity. The intended use of this document is to disclose the presence or absence of MGS within the Project limits. For the purposes of this document, the Project's study area is the 22 acre grid outlined in red on Figure 2.

There is one plant communities within the expansion area sparse disturbed creosote scrub.

Historical MGS occurrence records show that the species was historically detected on the northwestern portion of Searles valley across from the dry lake along highway 178 about ten miles from current project location.

No MGS were observed or captured within the Project Site. The Project Site does not currently support MGS.

Therefore, project implementation will not result in the loss of individual MGS, nor will it adversely affect local or regional MGS populations.

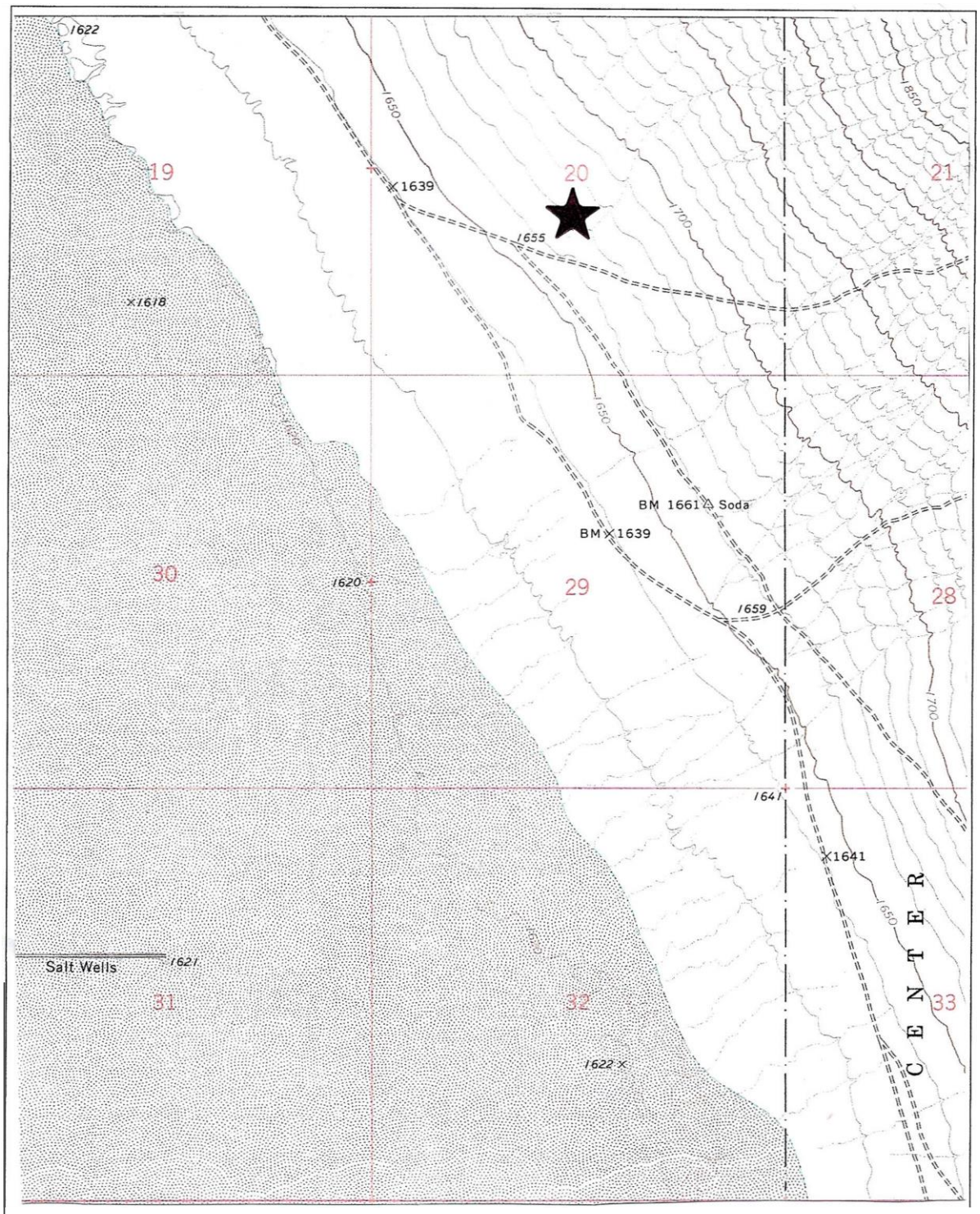

FIGURE 1: PROJECT LOCATION MAP

Source-U.S. Geological Survey

Searles Lake Quadrangle, California

2.0 PROJECT AND PROPERTY DESCRIPTION

A phase one site assessment was conducted on April 13 of 2017. The focused Mohave Ground Squirrel trapping surveys for the Searles Valley Minerals (SVM) East Borrow Pit (CA Mine ID # 91-36-0028) were also conducted in 2017. Three five-day trapping sessions were conducted from April 14 to 18, May 27 to 31, and July 1 to 5 of 2017. SVM and their predecessors have mined sand and gravel from the East Borrow Pit (pursuant to San Bernardino County Reclamation Plan 78M-0013) to provide material for construction of facilities on Searles Dry Lake since 1978.

The East Borrow Pit is located to the east of Trona, within Section 20, Township 25 South, Range 44 East, Mount Diablo Meridian, upon public land administered by the Bureau of Land Management Ridgecrest Field Office (BLM). SVM conducts mining of the site pursuant to a mineral material sales contract with BLM.

2.1 SITE VEGETATION

The site is located within a creosote bush (*Larrea tridentata*) and Burro brush or white bur-sage (*Ambrosia dumosa*) scrub plant community located adjacent to Searles Lake on a bajada originating in the Slate Range **(Figure 2).** Vegetation cover is less than twenty percent.

A list of plant species observed is provided in Appendix D.

2.2 SITE TOPOGRAPHY AND SOILS

The site is mostly flat, with a very slight slope trending southwest. Soils are mostly sandy with patches of gravel and cobles.

2.3 WILDLIFE

Observations of wildlife included scat, trails, tracks, burrows, skeletal remains, calls and visual sightings. Species observed included side-blotched lizard (*Uta stansburiana*), Great Basin whiptail (*Aspidoscelis tigris tigris*), antelope ground squirrel *(Ammospermophilus leucurus)*, and common raven (*Corvus corax*).

A list of wildlife species observed is provided in Appendix E. Appendix C shows photography of the study area and small mammal species captured..

3.0 BACKGROUND ON MOHAVE GROUND SQUIRREL

The MGS was listed as a rare species in 1971 under the authority of the California State Endangered Species Act of 1970 (CESA) and was re-designated as a state threatened species in 1985 (Gustafson 1993). The MGS is small, grayish, diurnal squirrel. The California Department of Fish and Wildlife (CDFW) is the responsible agency that provides for its protection and management.

MGS are dormant in the fall and winter months, but emerge from hibernation in February and begin pair bonding and mating during March (Gustafson 1993). If rainfall is adequate, MGS will reproduce. If rainfall levels are not sufficient to support substantial annual plant growth, then MGS will merely forage on herbaceous perennials and shrubs until they gain ample body mass for another prolonged period of dormancy (Gustafson 1993). The adult males can enter dormancy as early as late May. Juveniles will remain above-ground until August in order to acquire generous fat reserves prior to entering dormancy.

The site is within the historic range of the Mohave ground squirrel. MGS occur in the western half of the Mojave Desert. Its historical range encompasses an area between Antelope Valley and Lucerne Valley, in the south (Gustafson 1993). However, MGS occurrences in the southern portion of its range are very unusual. The northern limits of the range are near Owens Dry Lake bed, in the north, and through China Lake Naval Weapons Station and Fort Irwin Military Base in the east (Gustafson 1993). The eastern limit of the species range extends to Barstow and south along the Mojave River. The western limits loosely follow State Highway 14 and the foothills of the southern Sierra Nevada escarpment (Gustafson 1993). Several other common squirrels occur within their range; antelope ground squirrel (AGS; *Ammospermophilus leucurus*), round-tailed ground squirrel (RTGS; *Xerospermophilus tereticaudus*) and the California ground squirrel (CGS; *Spermophilus beecheyi*).

Recorded captures of MGS occur on the southwestern edge of Searles Valley along highway 178.

4.0 FOCUSED STUDY/SPECIES OF CONCERN

Prior to beginning field surveys, resource specialists were consulted and available information from resource management plans and relevant documents were reviewed to determine the locations and types of biological resources that have the potential to exist within and adjacent to the study area; MGS resources within several miles of the Project Site were evaluated as required per CDFW permit .

The materials reviewed included, but were not limited to, the following:

1. U.S. Fish and Wildlife Service (USFWS) Critical Habitat Mapper and File Data (USFWS 2013a);
2. USFWS Ventura Field Office Species List for San Bernardino County (2013b);
3. California Natural Diversity Database maintained by the California Department of Fish and Wildlife (CDFW 2013);
4. California Native Plant Society (CNPS) Electronic Inventory (CNPS 2013);
5. Aerial Photographs (Microsoft Corporation 2013); and
6. Previous biological reports prepared for the site
7. Leitner Current Status of MGS

5.0 METHODS

Survey methods were derived from generally accepted professional standards including the 2010 California Department of Fish and Game Mohave Ground Squirrel Survey Guidelines (CDFG 2010); and performed under the auspices of a Memorandum of Understanding (MOU) with the CDFW (Appendix A). Accordingly, a methodical pedestrian-survey of the study area was conducted to visually evaluate the limits of suitable habitat on April 13, 2017.

Since no MGS were detected during the visual survey, but potential burrows and scat were observed on site, MGS focused trapping surveys were initiated. Census occurred within one live-trapping grid, situated in the Project Site's highest quality habitat (Figure 2).

Per protocol since no MGS were captured during trapping surveys one and two, a third five-day trapping session was conducted.

Within the grid, 100 traps were deployed at roughly 30-meter (m) spacing. The grid consisted of a ten by ten array (angled to fit project contour), and covered approximately 22 acres. Standard small-mammal aluminum, foldable, ventilated 12–inch Sherman Traps were used within the Project Site for sampling purposes. The bait used consisted of crushed four-way grains with horse supplement. Folding cardboard boxes held down by dirt were deployed as shade covers for each trap as appropriate. Traps and shade covers were configured to provide the greatest shade cover possible.

Temperature readings were taken and recorded every hour, at 1 foot above the ground and at ground level in the shade. Traps were checked every 1-3 hours depending on temperature and other environmental influential factors (i.e., pregnant or lactating females in traps, feral dogs on grid, cold weather, presence of juveniles, etc.). Traps were open within 1 hour after sunrise and closed within 1 hour before sunset. Traps were closed when air temperature reached 90 °F. Temperatures never went below 50 °F. No rain occurred during the surveys. Weather data for each trapping session is provided within Appendix B.

During live trapping surveys, plants were identified to the lowest taxonomic level sufficient to determine whether the plant species observed were non-native, native, or special-status. Plants of uncertain identity were subsequently identified from taxonomic keys (Baldwin et al. 2012). Scientific and common species names were recorded. The presence of a wildlife species was based on direct observation and/or wildlife sign (e.g., tracks, burrows, nests, scat, or vocalization). Field data compiled for wildlife species included scientific name, common name, and evidence of sign when no direct observations were made. Wildlife of uncertain identity was documented and subsequently identified from specialized field guides and related literature. A reference list is attached to the document in Section 9.0.

6.0 SURVEY RESULTS

Weather data for each trapping session and representative photos of the study area are provided within Appendices B and C, respectively. All plant species observed during the surveys are identified within Appendix D and wildlife species observed are detailed in Appendix E. Additionally, survey dates, grid location, and trapping data are summarized in Tables 1, 2, and 3.

The visual survey was conducted on April 13, 2017.

Table 1. Live Trapping Dates

Grid No.	First Session	Second Session	Third Session
1	04/14/2017 to 04/18/2017	05/27/2017 to 05/31/2017	07/01/2017 to 07/05/2017

Table 2. Grid Census Locations

Grid No. and Trapping Session	Grid Corners
Grid 1 – Three Sessions	NW 117-16-04.0W 35-45-03.5 N SW 117-16-03.7 W 35-44-54.3 N NE 117-15-4 W 35-45-02.2 N SE 117-15-47.1 W 34-44-47.1 N

Table 3. Live Tapping Data Summary

Category	Grid A Individuals (recaptures)	Total for Project Including re-captures
Trap Hours, Per Trap	166	166
Captures Totals All Species		
MGS Captures	0	0
MGS Adult Male Captures	0	0
MGS Adult Female Captures	0	0
MGS Juvenile Male Captures	0	0
MGS Juvenile Female Captures	0	0
MGS Unknown Sex	0	0
AGS Captures	11 (17)	28
AGS Adult Male Captures	5 (9)	14
AGS Adult Female Captures	4(7)	11
AGS Juvenile Male Captures	1 (1)	2
AGS Juvenile Female Captures	1(0)	1
AGS Unknown Sex	0	0
Incidental Captures (excluding AGS)	2 *Dipodomys merriami*	2
Number Of Species Captured	2	2

MGS were not detected in the Project Site or within any census grids during any of the three live trapping sessions. Two species were trapped within the grid.

Total trap hours were in excess of 166 hours, averaging approximately 11 hours per day or 55.3 hours per live trapping event, and total captures were 56 representing 11 individual AGS and 2 Merriam's kangaroo rats (captured in AM at first trap check). There were no MGS captures. Capture totals were low and did not vary much by sessions. The lowest capture total was session 3, with only 1 captures.

7.0 IMPACTS AND RECOMMENDATIONS

The majority of the Project Site, estimated at 40 acres with an estimated 20 acres within the grid, consists of sparse density scrub.

Other than a seemingly seldom used ORV dirt road that bisects the site and the adjacent activities in the burrow pit the property is not subject to human interference.

Historical MGS occurrence records show that the species was historically detected on the northwestern portion of Searles valley across from the dry lake along highway 178 about ten miles from current project location.

No MGS were observed or captured within the Project Site. The Project Site does not currently support MGS.

Therefore, project implementation will not result in the loss of individual MGS, nor will it adversely affect local or regional MGS populations.

8.0 CERTIFICATION

I hereby certify that the statements furnished above and in the attached figures present the data and information required for this resource assessment, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Field work conducted for this investigation was performed by me. I certify that I have not signed a nondisclosure or consultant confidentiality agreement nor do I have any financial interest in the Project.

DATE: July 20, 2017 SIGNED: *Philippe Jean Vergne*

Report Author Philippe Vergne

9.0 REFERENCES

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APPENDIX A
CDFW MGS MOU

APPENDIX B
WEATHER DATA

WEATHER CONDITIONS	Temp. Air Min F.	Temp. Air Max F.	Temp. Soil Min F.	Temp. Soil Max F.	Cloud Cover % AM	Cloud Cover % PM	Wind Min Mph	Wind Max Mph
Session 1								
April 14	**57**	**87**	**58**	**88**	**0**	**0**	**3**	**12**
April 15	**63**	**91**	**63**	**92**	**0**	**0**	**5**	**9**
April 16	**65**	**99**	**65**	**101**	**0**	**0**	**4**	**12**
April 17	**76**	**95**	**74**	**96**	**0**	**5**	**7**	**12**
April 18	**74**	**97**	**75**	**98**	**0**	**0**	**8**	**15**
Session 2								
May 27	**74**	**106**	**73**	**103**	**0**	**0**	**5**	**6**
May 28	**73**	**110**	**72**	**107**	**0**	**0**	**12**	**22**
May 29	**75**	**111**	**74**	**109**	**0**	**0**	**7**	**13**
May 30	**52**	**87**	**59**	**89**	**0**	**0**	**9**	**15**
May 31	**57**	**86**	**60**	**88**	**0**	**0**	**8**	**16**
Session 3								
July 1	**87**	**122**	**86**	**114**	**0**	**10**	**3**	**15**
July2	**88**	**117**	**90**	**115**	**0**	**10**	**6**	**14**
July 3	**87**	**114**	**88**	**109**	**0**	**10**	**9**	**17**
July4	**89**	**116**	**90**	**111**	**0**	**0**	**5**	**11**
July 5	**86**	**114**	**87**	**111**	**0**	**0**	**7**	**18**

AM and Min. Readings at 06:30
PM and Max Readings at 15:00

APPENDIX C
PHOTOGRAPH LOG

SITE PHOTOGRAPHS

One of the Antelope Ground Squirrel Captured on Site. Note Borrow Pit in Background

Antelope Ground Squirrel Burrow On Site

SITE PHOTOGRAPHS

Antelope Ground Squirrel Captured on Site

Merriam’s Kangaroo rat on site

APPENDIX D
PLANT AND ANIMAL SPECIES OBSERVED WITHIN THE STUDY AREA

Common name	Scientific name
Burro Bush or white bur sage	*Ambrosia dumosa*
Desert sunflower	*Geraea canescens*
Fremont pincushion	*Chaenactis fremontii*
Barrel Cactus	*Ferocactus acanthodes*
Beaver tail cactus	*Opuntia basilaris*
Many-headed saltbush	*Atriplex polycarpa*
Four wing saltbush	*Atriplex. canescens*
Holly leaved saltbush	*Atriplex hymenelytra*
Desert five spot	*Eremalche rotundifolia*
Woody bottle washer	*Camissonia boothii*
Plantain	*Plantago insularis*
Annual bluegrass	*Poa annua*
Creosote bush	*Larrea tridentata*

Common name	Scientific Name
Reptiles	
Side-blotched Lizard	*Uta stansburiana*
Basin whiptail	*Aspidoscelis tigris tigris*
Desert horned lizard	*Phrynosoma platyrhinos*
Desert Tortoise	*Gopherus agassizii (Scat only)*
Birds	
Cactus Wren	*Campylorhynchus brunneicapillus*
Rock wren	*Salpinctes obsoletus*
Horned Lark	*Eremophila alpestris*
Common Raven	*Corvus corax*
Mammals	
Black-tailed jack rabbit	*Lepus californicus*
Burro	*Equus asinus*
Coyote	*Canis latrans*
White-tailed Antelope Squirrel	*Ammospermophilus leucurus*
Merriam's Kangaroo rat	*Dipodomys merriami*