

**CALIFORNIA DEPARTMENT OF FISH AND GAME**  
**MOHAVE GROUND SQUIRREL**  
**(*XEROSPERMOPHILUS MOHAVENSIS*)**  
**GUIDELINE**  
**SURVEY REPORT**

**PROPOSED IPG VICTORVILLE PROJECT**  
**SAN BERNARDINO COUNTY, CALIFORNIA**

Prepared By:  
**RANDEL WILDLIFE CONSULTING, INC.**  
South Pasadena, California

June 2023  
**(RWC File No. 152-0001)**

Prepared For:  
Industrial Property Group, Inc.  
Lake Stevens, WA 98258

## TABLE OF CONTENTS

<b>TABLE OF CONTENTS</b> .....	i
<b>LIST OF FIGURES</b> .....	i
<b>SUMMARY OF FINDINGS</b> .....	1
<b>INTRODUCTION</b> .....	1
Project Location .....	1
Mojave Ground Squirrel .....	2
Survey Location .....	5
MGS Survey Grid: Soil Description .....	5
Site Reconnaissance / Habitat Assessment .....	8
Focused Surveys: Mohave ground squirrel .....	8
Camera Surveys: Mohave ground squirrel .....	10
<b>RESULTS</b> .....	10
Site Context .....	10
Focused and Camera Trapping Surveys .....	11
<b>LITERATURE CITED</b> .....	14
<b>APPENDIX A –REPRESENTATIVE SITE PHOTOGRAPHS</b> .....	A
<b>APPENDIX B –WEATHER SUMMARY</b> .....	B
<b>APPENDIX C – MOHAVE GROUND SQUIRREL GRID DATA</b> .....	C

## LIST OF FIGURES

Figure 1 – Regional Vicinity .....	2
Figure 2 – Local Vicinity .....	3
Figure 3 – Mohave Ground Squirrel Distribution .....	5
Figure 4 – Mohave Ground Squirrel Survey Location .....	6
Figure 5 – Soil Types .....	8
Figure 6 – Vegetation Alliances .....	11

## **SUMMARY OF FINDINGS**

Randel Wildlife Consulting, Inc. conducted focused Mohave ground squirrel (MGS; *Xerospermophilus mohavensis*) surveys in 2023 at the proposed IPG Victorville Project located in unincorporated Victorville, San Bernardino County, California. Surveys were conducted in accordance with California Department of Fish and Wildlife guidelines and authorized under a Memorandum of Understanding between the California Department of Fish and Wildlife and Randel Wildlife Consulting, Inc. **No Mohave ground squirrels were detected as a result of 15 days of focused live-trapping efforts at the proposed project location.**

## **INTRODUCTION**

This report presents the results of focused Mohave ground squirrel (MGS; *Xerospermophilus mohavensis*) surveys on the proposed IPG Victorville Project, unincorporated Victorville, San Bernardino, California (Figure 1). Mohave ground squirrel focused surveys were conducted in accordance with California Department of Fish and Wildlife (CDFW) guidelines (CDFW 2003) and authorized by CDFW under Memorandum of Understandings between CDFW and Randel Wildlife Consulting, Inc. The purpose of this study was to determine the presence or absence of the California threatened Mohave ground squirrel within the proposed 66.4-acre IPG Victorville Project location, unincorporated San Bernardino County, California (Figure 2) pursuant to requirements outlined by the California Environmental Quality Act and California Endangered Species Act.

### **Project Location**

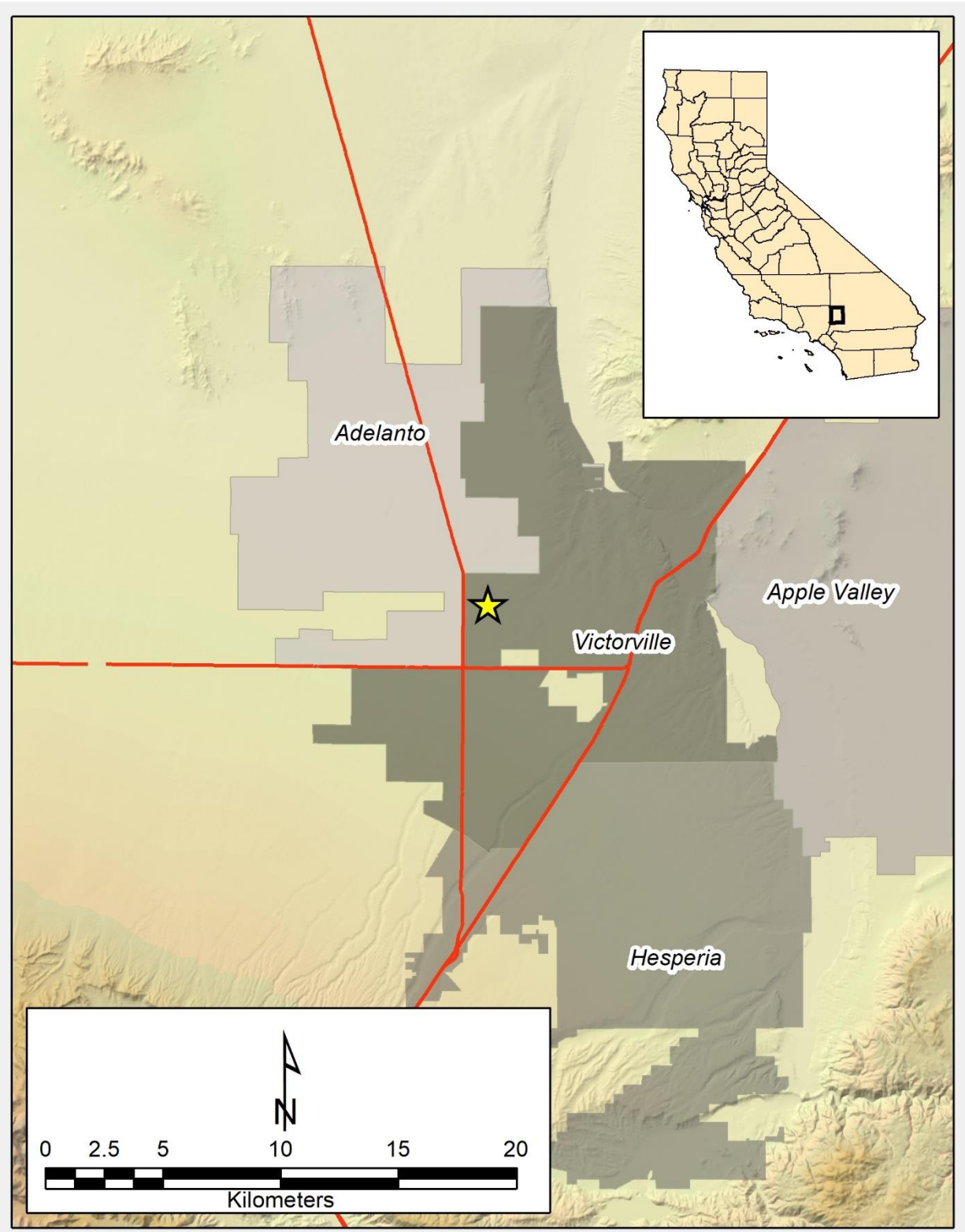
The proposed IPG Victorville Project is located on approximately 66.4-acres of undeveloped land bordered by Mojave Drive on the south, Cactus Road on the north, Onyx Road on the east, and Mesa Linda Drive on the west. The project is located in the southwestern portion of San Bernardino County, in the geographic sub-region of the southwestern Mojave Desert. The City of Victorville (hereafter City) is accessible via Interstate 15 (I-15), U.S. Highway 395 (US-395), State Route 18 (SR-18), and Historic Route 66 (National Trails Highway). The City shares boundaries with the City of Adelanto to the northwest, the Town of Apple Valley and the unincorporated community of Spring Valley Lake to the east, the City of Hesperia to the south, and unincorporated San Bernardino County to the southwest and the north. Portions of unincorporated San Bernardino County are nested within the City, including the unincorporated

community of Mountain View Acres. Within a one-mile radius, the Project site consists of primarily undeveloped desert land, with Melva Davis Academy of Excellence School and residential tract homes approximately one-half mile to the east, residential tract homes to the south of Mojave Drive, and vacant undeveloped land, and the High Desert Truck Stop approximately one-half mile to the northwest, and undeveloped land with US-395 about one-half mile to the west.

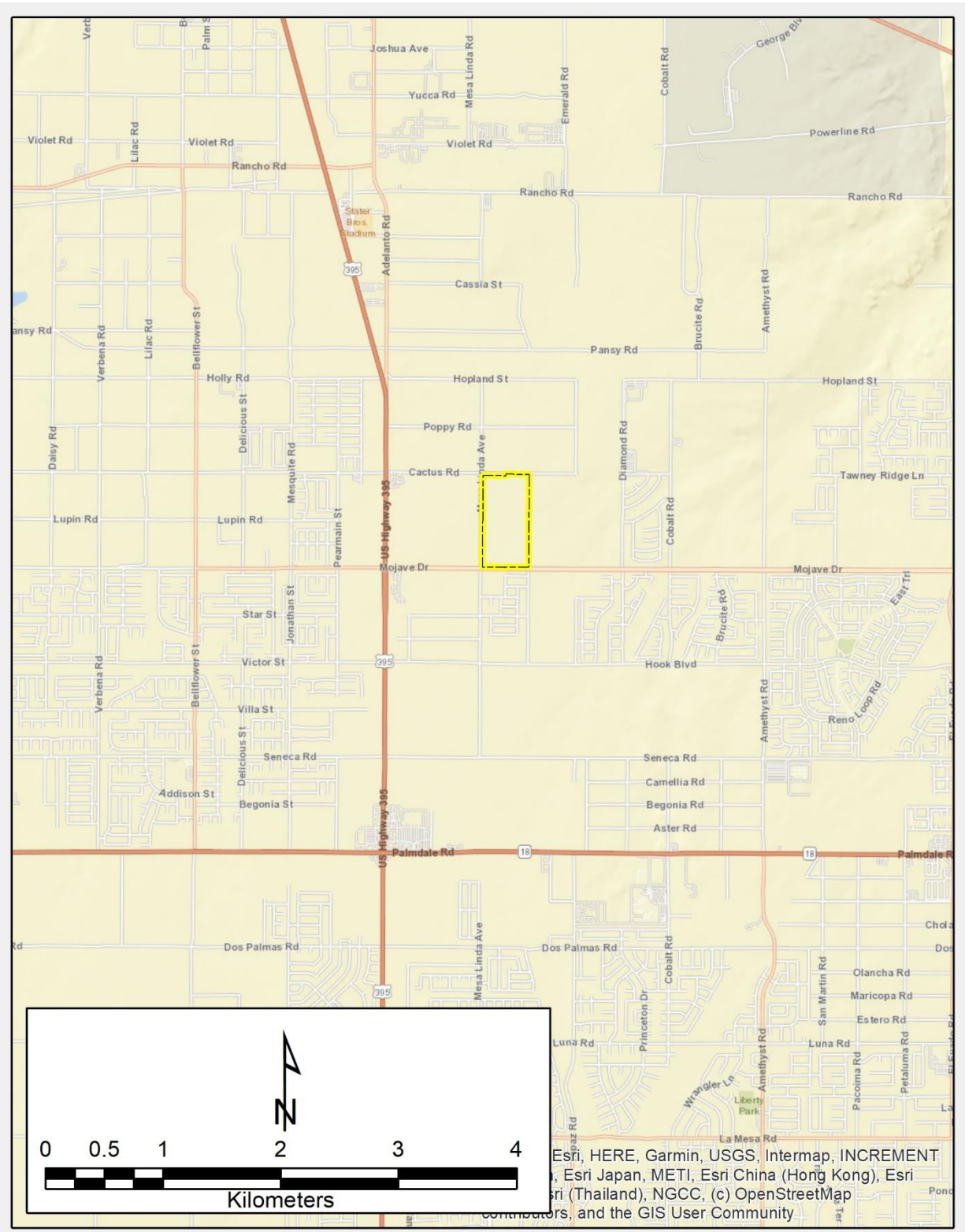
### **Mojave Ground Squirrel**

Mohave ground squirrel are small, diurnal ground squirrels endemic to the western Mojave Desert, occupying portions of Los Angeles, Kern, Inyo, and San Bernardino counties (Best 1995); with a historic distribution estimated at approximately 7,812 square miles from the eastern slopes of the Transverse and Sierra Nevada mountain ranges in the west to the Mojave River in the east, and from Owens Lake in the north to Palmdale in the south (Figure 3; Best 1995, Leitner 2008).

Mohave ground squirrel occupy desert scrub habitat associations with creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), and saltbush (*Atriplex* sp.) dominant or co-dominant at lower elevations and Joshua tree (*Yucca brevifolia*) and blackbrush (*Coleogyne ramosissima*) communities at elevations >1,500 m above mean sea level (Grinnell 1933, Ingles 1965, Best 1995). Mohave ground squirrel are non-communal and occur at relatively low abundance where present (Leitner and Leitner 2017). Mohave ground squirrel exhibit a seasonal activity pattern (late February to July) followed by an extended period of below ground dormancy annually (Bartholomew and Hudson 1960, Best 1995). During the active period MGS forage heavily to accumulate sufficient fat stores to both reproduce and survival aestivation and hibernation (Best 1995). Despite the need to approximately double their body mass, MGS are a trap shy species with a low detection probability.



 Project Location
 **Figure 1**  
Regional Vicinity



Esri, HERE, Garmin, USGS, Intermap, INCREMENTAL, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



IPG Victorville Project Location

**Figure 2**  
**Local Vicinity**

### ***Survey Location***

#### ***MGS Survey Grid: Legal Description***

Six parcels of land located in the State of California, County of San Bernardino, with tax assessor numbers of 3128-62-101, 3128-62-102, 3128-62-103, 3128-62-104, 3128-62-105, 3128-62-106. The same properties are more fully described by the Public Land Survey System as having an aggregate area of 66.4 acres located in the SW 1/2 of the SE 1/4 of Section 10, Township 5 North, Range 5 West; and entirely within the U.S. Geological Survey (USGS) 7.5-Minute Series Adelanto<sup>1</sup> topographic quadrangle (Figure 4).

#### ***MGS Survey Grid: Soil Description***

##### **Bryman Loamy Fine Sand, 2-5% slope (Figure 5).**

The Bryam series consists of deep, well drained soils formed in alluvium from dominantly granitic sources at elevations between 2,800 and 3,800 feet. Bryman soils are typically associated with terraces on older alluvial fans with slopes ranging from 0 to 15 percent. Vegetation associated with Bryman loamy fine sand is primarily creosote bush, bursage, ephedra, Joshua tree, and annual forbs and grasses. (NRCS 1986).

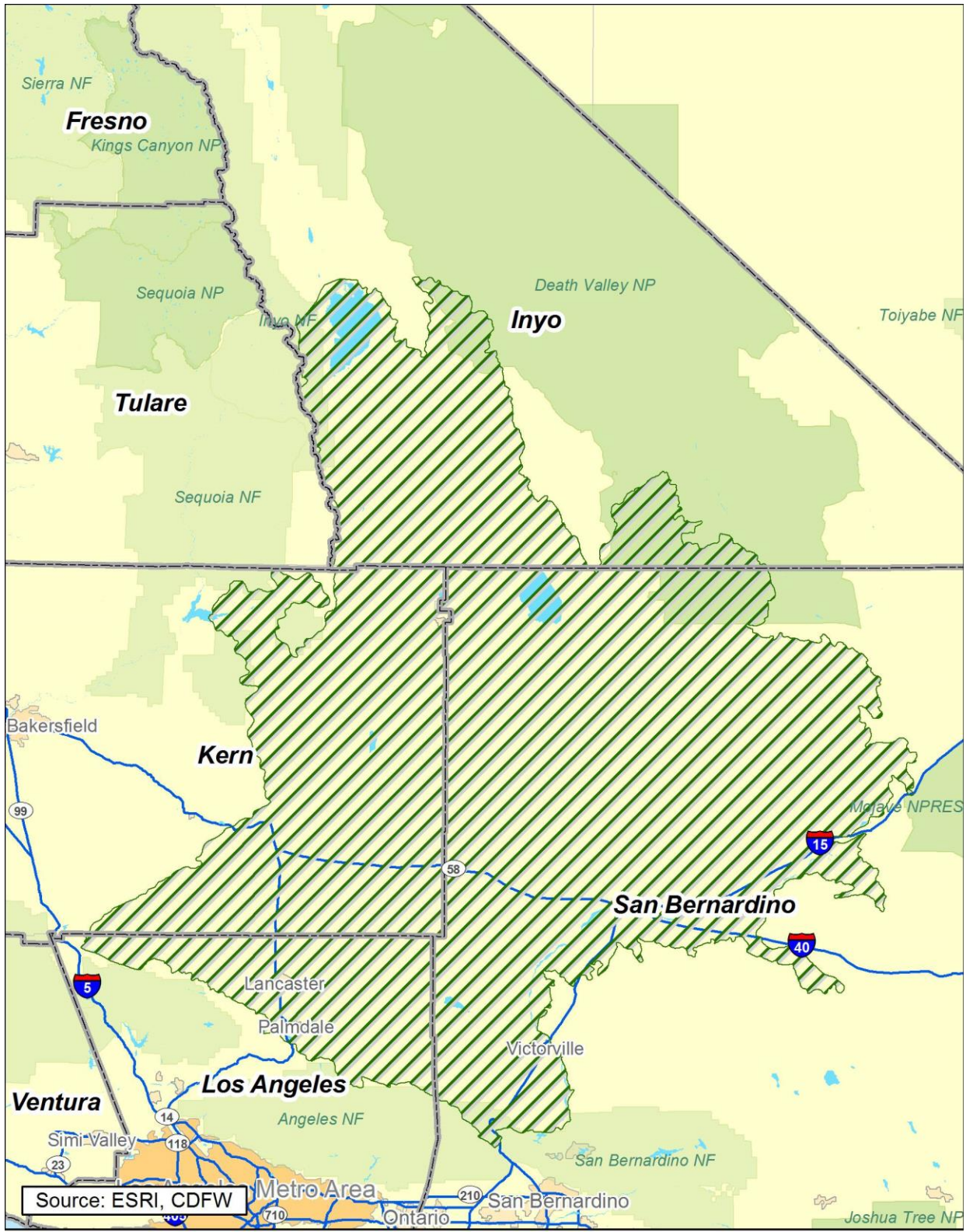
##### **Cajon Sand, 0-2% slopes (Figure 5)**


The Cajon series consists of very deep, somewhat excessively drained soils formed in sandy alluvium from dominantly granitic rocks at elevations ranging from 200 to 4,300 feet. Cajon soils are associated with alluvial fans, fan skirts, fan aprons, inset fans, and river terraces with slopes ranging from 0 to 15 percent. Vegetation associated with Cajon sand is mostly desert shrubs including creosote bush, saltbush, ephedra, Joshua tree, and some perennial and native grasses (NRCS 1986).

---

<sup>1</sup> United States Geological Survey. 2021. 7.5-Minute Adelanto Topographic Quadrangle. Reston, VA 22092.

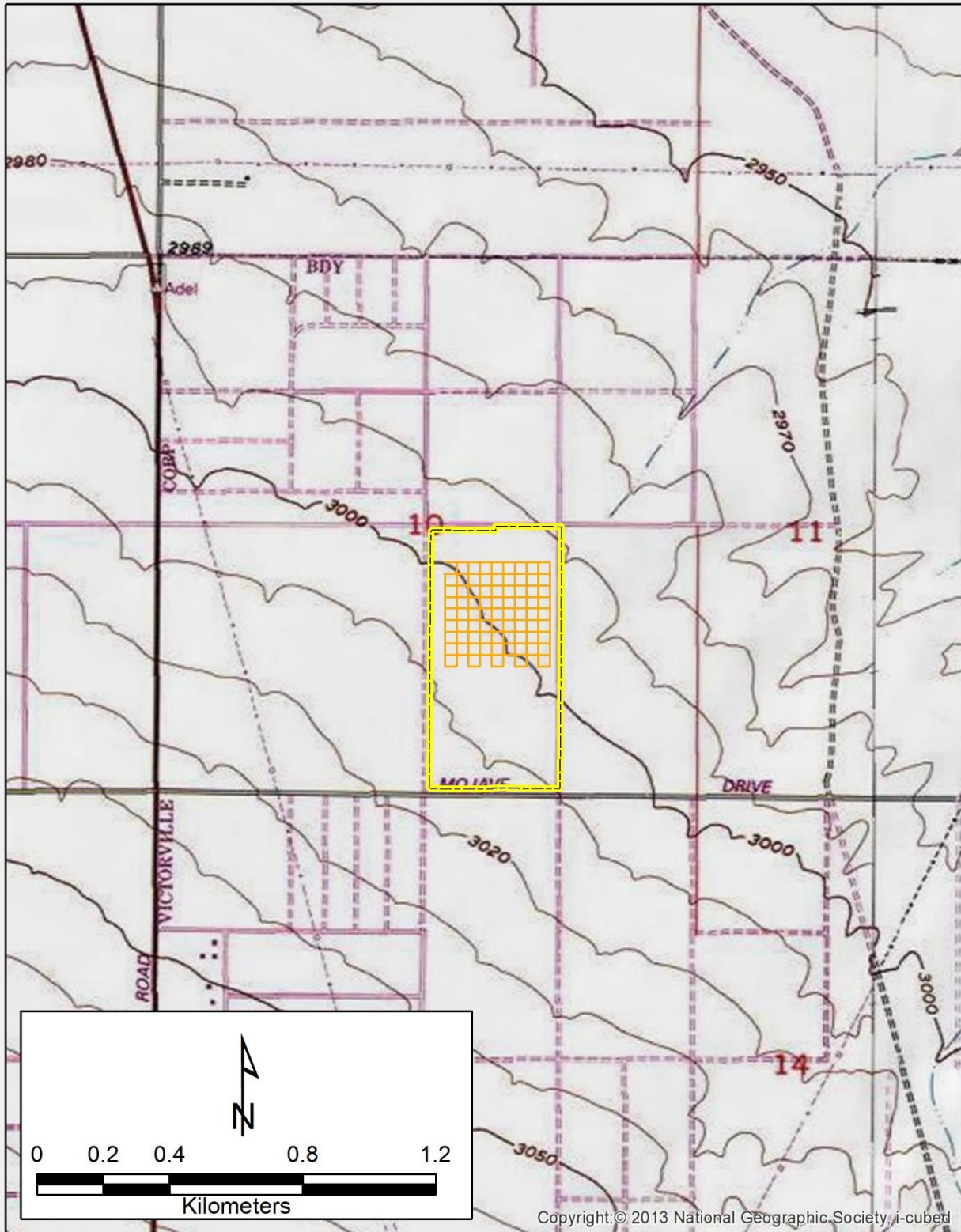




 Mohave Ground Squirrel

**Figure 3. Mohave Ground Squirrel Distribution**





Copyright © 2013 National Geographic Society, i-cubed



-  IPG Victorville Project Location
-  MGS Grid

**Figure 4**  
**Mohave Ground Squirrel**  
**Survey Location**

### *MGS Grid 1: Land Cover/Land Use*

Current zoning is Light Industrial (M-1T); with a Land Use designation of Light Industrial (City of Victorville, Zoning and Land Use Checker, accessed 3 April 2023). A historic image review (1952–present) conducted by Randel Wildlife Consulting, Inc. did not result in the identification of significant prior disturbance. The parcel is undeveloped with minor off-highway vehicle use and illegal dump sites (see Appendix A).

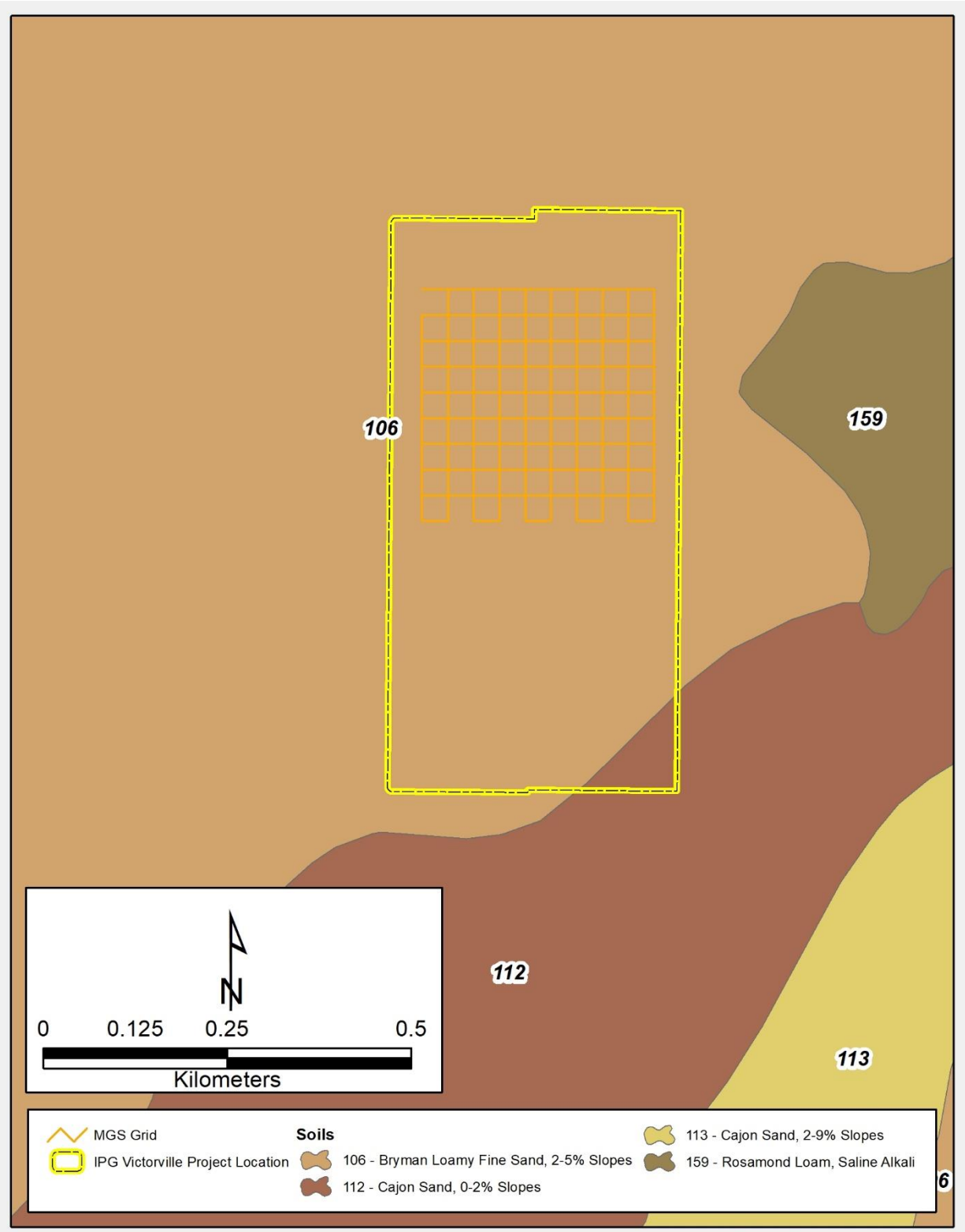
## **METHODS**

### **Site Reconnaissance / Habitat Assessment**

A habitat assessment of the subject property was conducted by Dr. Charles J. Randel in 31 March 2023. Surveys were conducted to allow for 100% visual coverage of the subject site with biological resources and potential constraints to focused surveys identified. As a result of the reconnaissance level surveys, it was determined that suitable habitat (e.g., *Larrea tridentata* Shrubland Alliance, Sawyer et al. 2009) for the Mojave ground squirrel was present over the majority of the subject property and focused Mohave ground squirrel surveys should be conducted to determine presence/absence of the species within the subject properties.

### **Focused Surveys: Mohave ground squirrel**

Randel Wildlife Consulting, Inc. conducted focused Mohave ground squirrel surveys in accordance with CDFW guidelines (CDFG 2003). Surveys consisted of five consecutive days of live-trapping during three predefined sessions (Session 1: 15 March–30 April; Session 2: 1–31 May; Session 3: 15 June – 15 July). Each survey session consisted of 100 live-traps spaced 35-m on center in a 10 x 10 array, baited with 4-way horse feed, and shaded to prevent heat stress. Traps were checked no less frequently than every four hours, when temperatures were between 40°–90° F.



**Figure 5**  
**Soil Types**

## **Camera Surveys: Mohave ground squirrel**

Randel Wildlife Consulting, Inc. installed five Browning Strike Force HD ProX model game cameras within the Mohave ground squirrel focused survey grid. Cameras were mounted to a t-post using zip-ties at a vertical height of 1 m, oriented to true north, with a downward pitch angle of approximately 53° to cover PVC baits placed approximately 1.5 m north of the camera. Cameras were installed and operational concurrently with focused surveys. Cameras were programmed to collect a three burst image collection 24 hours per day, with a trigger recovery delay of 1 second.

## **RESULTS**

### **Site Context**

#### *Ecoregion*

The MGS focused survey site is located in the EPA's Western Mojave Basins Level IV Ecoregion. This ecoregion includes the alluvial plains, fans, and bajadas of major valleys located between the dispersed mountain ranges of the Mojave Basin and Range Level III Ecoregion. North to south climate and vegetation variation is minimal with creosotebush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) dominate on the landscape (Griffith et al. 2016).

#### *Vegetation Alliance*

The major Vegetation Alliance was consistent with *Larrea tridentata* Shrubland Alliance (Sawyer et al. 2009) with an estimated area of 55.4 acres. This vegetation alliance is found on minor washed and rills, alluvial fans, bajadas, and upland slopes of well-drained, alluvial, colluvial, and/or sandy soils. Evidence of vegetation community degradation was present at both the focused survey location and throughout the subject property with anthropogenic sources (e.g., OHV use and illegal dumping) identified as the primary factors in degraded status (Appendix A – Site Photographs).

Approximately 11 acres located in the southwestern portion of the proposed project area is consistent with non-native grassland following anthropogenic disturbance(s). Aerial image reviews of the subject property identified vegetation removal as having occurred prior to IPG's acquisition of the subject properties (Figure 6).

## Focused and Camera Trapping Surveys

CDFW Mohave ground squirrel guideline surveys were conducted by Randel Wildlife Consulting, Inc. on the following dates (Appendix C – Mojave Ground Squirrel Grid Survey Data):

### Dates of Focused and Camera Trapping

- Session 1: 1–5 April 2023
- Session 2: 16–20 May 2023
- Session 3: 15–19 June 2023

No Mohave ground squirrels were identified as a result of either focused surveys or camera trapping surveys of the subject parcels. Mammalian species captured included only the white-tailed antelope squirrel (*Ammospermophilus leucurus*) and California ground squirrel (*Otospermophilus beecheyi*).

**Table 1. Summary of diurnal captures by species and trapping session.**

Session	Species	New Captures	Recaptures	Total Captures
1	White-tailed Antelope Squirrel	6	3	9
2	White-tailed Antelope Squirrel	9	2	11
3	White-tailed Antelope Squirrel	8	2	10
3	California Ground Squirrel	1	0	1

**Table 2. Summary of camera trapping surveys.**



Session	Camera Trap Days	Mean ( $\pm$ SD) Images
1	5	6469 $\pm$ 3054
2	5	5489 $\pm$ 3241
3	5	3637 $\pm$ 2302

**Table 3. Wildlife Species Documented.**

<b>Common Name</b>	<b>Scientific Name</b>
Painted lady	<i>Vanessa cardui</i>
White-lined sphinx moth	<i>Hyles lineata</i>
Western whiptail	<i>Aspidocelis tigris tigris</i>
Western side-blotched lizard	<i>Uta stansburiana elegans</i>
Mojave green rattlesnake	<i>Crotalus scutulatus</i>
Common raven	<i>Corvus corax</i>
Say's phoebe	<i>Sayornis saya</i>
Yellow-rumped warbler	<i>Setophaga coronate</i>
House finch	<i>Haemorhous meicanus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Turkey vulture	<i>Cathartes aura</i>
Horned lark	<i>Eremophilus alpestris</i>
Ash-throated gray flycatcher	<i>Myiarchus cinerascens</i>
White-tailed antelope squirrel	<i>Ammospermophilus leucurus</i>
California ground squirrel	<i>Otospermophilus beecheyi</i>
Merriam's kangaroo rat	<i>Dipodomys merriamii</i>
Black-tailed jackrabbit	<i>Lepus californicus</i>
Coyote	<i>Canis latrans</i>





-  Larrea tridentata Alliance
-  Ruderal / Non-native grassland



**Figure 6**  
**Vegetation Alliances**

## LITERATURE CITED



- Bartholomew, G.A., and J.W. Hudson. 1960. Aestivation in the Mohave ground squirrel *Citellus mohavensis*. Bulletin of the Museum of Comparative Zoology 124:193–208.
- Best, T.L. 1995. *Spermophilus mohavensis*. Mammalian Species 509:1–7.
- California Department of Fish and Game [CDFG]. 2003. Mohave ground squirrel survey guidelines. California Department of Fish and Game, Sacramento, CA, USA.
- Griffith, G.E., J.M. Omernik, D.W. Smith, T.D. Cook, E. Tallyn, K. Moseley, and C.B. Johnson. 2016. Ecoregions of California (poster): U.S. Geological Survey Open-File Report 2016-1021, with map, scale 1:1,100,000.
- Ginnell, J. 1933. Review of recent mammal fauna of California. University of California Publications in Zoology 40:71–234.
- Gustafson, J.R. 1993. A status review of the Mohave Ground Squirrel (*Spermophilus mohavensis*). California Department of Fish and Game. Nongame Bird and Mammals Report 93-9.
- Holland, R.F. 1986. Preliminary descriptions of the terrestrial natural communities of California. California Department of Fish and Game, Sacramento, CA, USA.
- Ingles, L.G. 1965. Mammals of the Pacific states: California, Oregon, and Washington. Stanford University Press, Stanford, CA, USA.
- Leitner, P. 2008. Current status of the Mohave ground squirrel. Transactions of the Western Section of the Wildlife Society 44:11–29.
- Leitner, B.M., and P. Leitner. 2017. Diet of the Mohave ground squirrel (*Xerospermophilus mohavensis*) in relation to season and rainfall. Western North American Naturalist 77:1–13.
- Natural Resources Conservation Service [NRCS]. 1986. Soil survey San Bernardino County, California, Mojave River Area. United States Department of Agriculture, Soil Conservation Service, Washington, DC.
- Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens (eds.). 2009. A manual of California vegetation (2<sup>nd</sup> ed.). California Native Plant Society, Sacramento, CA, USA.
- United States Geological Survey. 2023. 7.5-Minute Adelanto Topographic Quadrangle. Reston, VA 22092.



## APPENDIX A – REPRESENTATIVE SITE PHOTOGRAPHS

Photos	
<p><b>Description</b></p> <p><b>IPG MGS Grid</b></p> <p><b>20 May 2023</b></p> <p>Photo from NW to SE</p>	 <p>Randel Wildlife Consulting Inc IPG MGS Grid NW corner (facing SE) 05.20.2023 07:26 AM 11S 464222 3821528 Mesa Linda Ave, Adelanto, CA 92301, USA</p>
<p><b>Description</b></p> <p><b>IPG MGS Grid</b></p> <p><b>20 May 2023</b></p> <p>Photo from SW to NE</p>	 <p>Randel Wildlife Consulting Inc IPG MGS Grid SW corner (facing ENE) 05.20.2023 07:13 AM</p>



Photos	
<p><b>Description</b></p> <p><b>IPG MGS Grid</b></p> <p><b>20 May 2023</b></p> <p>Photo from SE to NW</p>	 <p>Randel Wildlife Consulting Inc IPG MGS Grid SE corner (facing NW) 05.20.2023 07:17 AM</p>
<p>Southeast corner of Mohave ground squirrel survey grid. Image is taken toward interior of grid showing <i>Larrea tridentata</i> Vegetation Alliance</p>	
<p><b>Description</b></p> <p><b>IPG MGS Grid</b></p> <p><b>20 May 2023</b></p> <p>Photo from NE to SW</p>	 <p>Randel Wildlife Consulting Inc IPG MGS Grid NE corner (facing WSW) 05.20.2023 07:21 AM</p>
<p>Northeast corner of Mohave ground squirrel survey grid. Image is taken toward interior of grid showing disturbed vegetation in the southwestern portion of the project property</p>	





## APPENDIX B –WEATHER SUMMARY

Date	Temperature (F)				Cloud Cover (%)				Wind (MPH)			
	Min	Time	Max	Time	Min	Time	Max	Time	Min	Time	Max	Time
4/1/23	45	0800	70	1300	0	0800	30	1400	0	0800	20	1730
4/2/23	45	0700	65	1500	0	0700	25	1130	7	0700	25	1600
4/3/23	41	0700	41	1030	30	0700	50	0900	19	0700	35	1015
4/4/23	40	1000	51	1530	0	1000	0	1830	30	0945	10	1400
4/5/23	41	0830	60	1500	0	0830	0	1500	0-5	0830	5-15	1100
5/16/23	64	0600	90	1130	50	1130	60	0600	0-5	0600	0-5	1130
5/17/23	62	0600	91	1115	0	0600	0	1115	0-5	0600	0-10	1115
5/18/23	64	0600	91	1330	0	0600	0	1330	0-3	0700	0-5	1500
5/19/23	61	0600	93	1500	10	0600	10	1500	0-5	0600	5-10	1500
5/20/23	64	0600	92	1130	30	0600	30	1130	0-5	0600	5-10	1130
6/15/23	52	0530	88	1230	20	0530	10	1430	0-5	0930	15-20	1530
6/16/23	60	0530	88	1430	100	0530	25	1825	0-5	0530	15-20	1825
6/17/23	66	0530	92	1230	10	0530	10	1230	0-5	0530	5-10	1230
6/18/23	54	0545	81	1345	10	0545	10	1700	5-10	0645	30-35	1600
6/19/23	61	0545	84	1345	0	0545	0	1700	0-5	0545	10-20	1700



## APPENDIX C – MOHAVE GROUND SQUIRREL GRID DATA

### Part I – PROJECT INFORMATION (use a separate form for each sampling grid)

Project name: IPG Victorville Project

Property Owner: Private

Parcel: 3128-62-101, 3128-62-102, 3128-62-103, 3128-62-104, 3128-62-105, 3128-62-106

Location: Unincorporated Victorville, San Bernardino County, CA

GPS (UTM) coordinates of trapping grid corners:

UTM coordinates of Grid 1		
Grid Corner	Easting	Northing
NW corner	464213	3821525
SW corner	464212	3821210
NE corner	464529	3821525
SE corner	464530	3821209
UTM coordinates were obtained from a Garmin GPSMAP 60CSX, set to NAD 83 UTM Zone 11		

Total acreage visually surveyed on project site: 66.4

Acreage of potential MGS habitat \*\* acres: 55.4

Acreage of Survey Area: 24.5

Date: 31 March 2023

Visual surveys conducted by: Charles J. Randel, PhD

Total acres trapped: 24.5

Number of sampling grids: 1

Trapping conducted by: Charles J. Randel, PhD

Dates of sampling term(s): (all 2022)

FIRST: 4/1-5/2023 SECOND: 5/16-20/2023 THIRD: 6/15-19/2023

### Part II – GENERAL HABITAT DESCRIPTION (use back of form if needed)

Dominant perennial vegetation: *Larrea tridentata*

Other perennial vegetation: *Yucca brevifolia*, *Ephedra* sp., *Ambrosia dumosa*, *Dipterostemon capitatus*, *Cylindropuntia echinocarpa*

Dominant annuals: *Erodium cicutarium* (I/I), *Schismus arabicus* (I/I)

Other annuals: *Caulanthus lasiophyllus*, *Amsinckia tessellate*, *Camissoniopsis bistorta*, *Gilia* sp., *Lasthenia californica*, *Bromus rubens* (I/I), *Descurainia pinnata*

Land form (mesa, bajada, wash): Generally flat. Ephemeral wash with isolated Joshua trees present.

Soils description: Bryman Loamy Find Sand, 2-5% Slopes (Dominant soil type) and Cajon Sand, 0-2% (minor component)

Elevation: 2,988 – 3,005 ft

Slope: 0-5%

